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SHORT NOTES

J. C. Lattimer
—ON—
**Veterinary Medicine
and Surgery.**

FOR THE

USE OF STUDENTS

AT THE O. A. C.

—BY—

J. HUGO REED,
PROFESSOR VETERINARY SCIENCE.

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PATHOLOGY.

PATHOLOGY means a discourse on disease.

HEALTH is that condition of the body when all the functions are performed with regularity and harmony, (exception, a blind man.)

DISEASE is a deterioration from the healthy standard, whether of structure or function.

It is necessary to be conversant with the definitions of certain technical terms that are frequently used in discussing diseases.

ETIOLOGY treats of the causes of disease; predisposing and exciting. There is always a cause, but often hard to find.

SYMPTOMATOLOGY, or study of the symptoms of disease, or the means by which disease is recognized from the symptoms presented by the organ or organs affected. Symptoms may be general or local.

DIAGNOSIS is the discrimination of disease.

PROGNOSIS is telling the probable termination of disease.

THERAPEUTICS, that branch of medicine which has reference to the treatment of disease.

DISEASES are classified under different names according to the progress and character of the disease.

An **EPIZOOTIC** (epidemic) disease is a disease that affects a large number of animals similarly at the same time without any appreciable cause.

ENZOOTIC diseases are confined to localities and are due to local causes. May or may not be contagious.

A SPECIFIC disease is one peculiar to a certain class of animal, the virus of which, if introduced into another animal, may produce the same disease. (Not necessarily contagious.)

SPORADIC, one due to accidental causes.

ZYMOTIC, due to a poison causing a ferment in the blood.

A CONTAGIOUS, or infectious disease is one that can be transmitted to another animal (not necessarily of the same species) by the introduction into its system of the virus of the disease.

Most diseases consist in some changes in the blood. In a living body there is a continual change taking place, and the great characteristics of these changes are the processes of decay and reparation, which terminate only with life. Substances pass into the blood and are carried into all parts of the body. Waste is taken up in the blood and carried from the body. The body wastes during the day, or time of labor, and during repose it is nourished, and the waste repaired. The human body, during one year, loses about 3000 lbs., by waste of tissue, and the repair equals the waste. In youth the repair exceeds the waste, so that the animal gradually grows. In the adult they are just about equal, provided there be a certain amount of exercise. In old age the waste is in excess and the body becomes smaller. In disease a change takes place, the equilibrium is upset, and there is a change of function or structure. Life is maintained in the body by the circulation of pure, or arterial blood through the system. This blood is the fluid of the body; whenever arterial blood ceases to circulate, death is the result, or if it circulates and becomes impure, there follows a similar result. If the blood becomes changed but slightly, disease is quickly produced. If the change be great, death soon results.

LIFE may be defined as the aggregate of the functions which resist death, while DEATH may be said to be the cessation of all the functions, the aggregate of which maintain life.

DEATH may occur in different ways. If no blood circu-

lates death takes place from **SYNCOPE**, or death beginning at the heart from a want of a supply of blood. Bleeding causes death from Syncope, the heart losing its stimulus, the blood. Death from Syncope may occur in other ways. The heart may lose its contractile powers from a blow over the heart or stomach, or from poisons, or from fright; or from derangements of the nervous system.

Death from **ASPHYXIA**, or **APNŒA**, results from want of access of air into the lungs, as in drowning, choking, hanging, etc.

Death from **COMA** begins in the brain, caused by injury or disease, frequently from medicines, acting upon the organ and destroying its functions.

NECRŒMIA, or death beginning in the blood, is said to occur in those fatal diseases in which the blood loses its natural character, the result of decomposition.

BLOOD.

Blood is the great and important fluid of the body, and is carried through the system by means of a set of vessels, they are **ARTERIES**, **CAPILLARIES** and **VEINS**. The **HEART** is the great centre of the circulation, it acts as a force pump and sends the blood through the system, but there is a power in the vessels of drawing the blood to them to a certain extent, somewhat as the sap is drawn up in a tree. All the tissues of the body, whether bone, muscle, hair, etc., are nourished by the blood. Blood is of a red color viewed as a whole, and is a fluid, but not a perfect fluid. It is composed of a fluid portion, **LIQUOR SANGUINIS**, and a solid portion, **CORPUSCLES** or **BLOOD CELLS**; these are of two kinds, the **RED** and the **WHITE**, the average in number being about 250 red to 1 white, but they vary in both health and disease. These corpuscles float in the liquor sanguinis. The red ones give color to the blood. In warm blooded animals the white corpuscles are the larger of the two, and are rather irregular in outline and change their form to a great extent. The red corpuscles also change during disease.

The amount of blood in an animal is from one-tenth to one-eighth of the weight of the animal. (Authors differ as to the analysis of blood, but we accept the following :

Analysis of Blood.

Water.	785.0
Albumen.....	69.0
Fibrin.....	3.0
Alkaline and neutral salts.....	8.5
Fatty and extractive matters.....	7.5
Corpuscles	127.0

Total 1000.0

(Albumen, fibrin and salts, in solution form the liquor sanguinis which gives liquor sanguinis 873, corpuscles 127 parts in 1000. Alkaline and neutral salts as follows: chloride of sodium, chloride of potassium, phosphate of soda, carbonate of soda, phosphate of magnesia, phosphate of lime, phosphate of iron, oxide of iron.

LIVING OR CIRCULATING BLOOD, is composed of a solid and fluid substance. The corpuscles are the solid portion and the remaining constituents from the fluid portion or liquor sanguinis. The **SERUM** is the liquor sanguinis minus the fibrin. When blood is drawn from the body and allowed to stand, it separates into two portions, coagulates, forming the clot and the serum. This conglutination depends upon the presence of fibrin, which has the power of spontaneously coagulating, and forms a net work of fibres, in the meshes of which are included the red and white corpuscles. The **CLOT** then contracts and squeezes out the serum. If health is to be preserved it is necessary that the constituents of the blood should be present in proper quantities.

Functions of the Constituent of the Blood.

WATER holds in solution different salts and gives fluidity to the blood and secretion.

ALBUMEN is the substance from which the tissues of the body are formed.

FIBRIN gives plasticity to the blood, prevents it from passing through the coats of the vessels, and arrests bleeding by plugging up the mouths of open vessels.

RED CORPUSCLES carry the oxygen to the tissues, and deport carbonic acid from them to the lungs, where it is eliminated. They also prepare the materials of the blood which are to be used in the nutrition of the tissues.

WHITE CORPUSCLES are also concerned in the preparation of nutrient material for the tissues of the body.

ALKALINE SALTS, as sodium and potassium are necessary to give the blood its alkalinity, and to hold in solution its albumen, and to facilitate the passage of the blood through the capillaries.

LIME PHOSPHATE, CARBONATE and FLUORIDE are required to build up the solid tissues, as bone and teeth.

FATS afford material for the combusive process which is necessary for the maintenance of animal heat.

The EXTRACTIVE matters are the result of retrograde change and are rapidly eliminated from the system by the lungs, kidneys, skin, etc.

We have VENOUS, or dark red blood ; and ARTERIAL, or blood of bright red color. The dark blood is carried to the heart, thence it is forced to the lungs where the carbonic acid is given off and oxygen taken on, which changes the color to a bright red.

Inflammation.

INFLAMMATION may be defined to be perverted nutrition of a living part, the effect of irritation or injury. NUTRITION takes place in the following manner. The red corpuscles move rapidly along in the centre of the stream of blood in a small vessel, while on either side and close to the wall of the vessel there is a space containing liquor sanguinis and a few white corpuscles which move much more slowly than the blood in the centre of the stream. The fluid part of the blood is that chiefly concerned in nutrition. It contains the nutritive elements in solution which is absorbed by the various tissues.

The CAPILLARIES consist of a single coat of delicate membrane so that the nutritive material can easily pass out of them, and nutrition is carried on entirely in the tissues which

fill up the space between the capillaries. Every tissue has an inherent power of attracting and selecting from the blood those constituents best suited for its nourishment. From this it will be seen that the fluid part of the blood is continually transuding through the walls of its vessels for the purpose of nourishing the tissues. A perversion of this, with a rapid transformation of the transuded material, and an altered mode of growth of the elements of the inflamed texture constitute the inflammatory process.

The **CAUSES** of inflammation are predisposing and exciting. The former are debility of an organ, or of the whole body arising from old age ; previous disease or a natural weakness, hereditary taint, climatic influences, dietetic errors, insufficient ventilation, ill treatment, etc. The exciting causes are direct violence, the application of irritants, exposure to heat and cold, the presence of foreign bodies, abnormal condition of the blood, etc.

SYMPTOMS, redness, pain, heat and swelling. Redness can only be detected on white parts of the body and on the visible mucous membranes in our patients, it arises from an increased supply of blood to the part.

PAIN varies in degree and in kind according to its cause, intensity, and seat, it results from the pressure of the swelling on the nerves. Pain is not a constant sign of inflammation.

HEAT is due to the changes that are being undergone, for blood returning from an inflamed part has a higher temperature than that going to it.

SWELLING depends upon the congestion of the vessels and the exudation of liquor sanguinis into the tissues.

If a part has been in a state of inflammation it must have a termination or result, and these are Resolution, Adhesion, Effusion, Suppuration, Ulceration and Mortification or Gangrene.

RESOLUTION is said to result when the parts regain their normal condition.

ADHESION is where the exudate is not absorbed, but be-

comes converted into organized tissue as in pleurisy or interfering.

EFFUSION is where there is an escape of fibrin or its constituents, but it does not coagulate until exposed to the air. It denotes an ill-conditioned state of the blood.

SUPPURATION is when pus is formed, it may be circumscribed, diffused or superficial.

ULCERATION is death of a part in small particles.

GANGRENE, or mortification, is death of a part either in its entirety or a portion of greater or less size; when this process commences it is called sloughing.

The terms ACUTE, SUBACUTE and CHRONIC have reference to the severity, duration, rapidity or slowness of its course. SYMPTOMS are of two kinds LOCAL and CONSTITUTIONAL. The former has been described. The latter vary according to the severity of the attack and the organs or parts attacked. The temperature is increased. Normal in horse and ox, about 99 to 100, sheep a little higher. It is often ushered in by rigors, loss of appetite, excitability, followed by dullness. The secretions and excretions are impaired, the bowels costive and urine scanty. The pulse is accelerated, the normal number of beats in the minute in the horse is from 36 to 40, ox 40 to 50, dog 80 to 100 according to size and breed, sheep 70 to 80. The pulse of a young animal is more frequent than that of an adult. The pulse felt by the finger is due to the fact that the artery expands during the contraction of the heart which forces the blood through the arteries, and returns to its previous condition during the relaxation of the heart. The pulse can be felt any place where an artery runs close to a bone and is not covered deeply by muscles. In the horse and ox we get the pulse at the jaw (THE SUBMAXILLARY) or on the inner side of the arm, (THE BRACHIAL). In the dog and sheep on the inside of thigh, (THE FEMORAL). The pulse varies in character in different diseases, and is recognized by different names according to the impression it conveys to the finger.

FREQUENT and INFREQUENT as regards the number in a given time.

QUICK and SLOW, according to the time occupied by each beat.

LARGE and SMALL, according to dilatibility.

HARD and SOFT, according to compressability.

In health there is a uniform relation between the number of pulsations and respirations, there are 3 or 4 of the former to one of the latter, but in disease we have various modifications of this rule.

TREATMENT.—Remove the cause, keep the animal at rest in a comfortable place, attend to its comfort according to the weather, give easily digested food and cold water AD LIB. Bloodletting either local or general is sometimes good practice. Sedatives, opiates, purgatives, diuretics, in first stages, followed by tonics. This is constitutional treatment. Local treatment consists of fomentations, hot or cold, anodyne or cooling lotions in first stages, followed by stimulants, afterwards by counter irritants.

This of course, is the general treatment for inflammation. We will consider as we go along, inflammation of different kinds and of different organs, the treatment of which varies to a great extent according to the organ involved.

DISEASES OF BONE.

Ostitis, or inflammation of bone, is usually caused by external violence or concussion, and is usually associated with periostitis. It may occur in any situation and may involve the whole bone but is usually confined to a portion, may be acute or chronic.

SYMPTOMS.—Severe tenderness of the part. Lameness if a limb be the seat ; swelling, at first of a doughy character, but which soon becomes hard ; heat in the part.

TREATMENT. Rest, fomentations, anodyne or cooling lotions, followed by counter irritation, or periosteotomy.

Prescriptions.

ANODYNE LOTION.

Tincture of Opium...2 fluid oz.
Acetate of lead.....3 drachms
Water.....8 fluid oz.

STIMULENT LINIMENT.

Alcohol.....2 fluid oz.
Oil of Turpentine....2 "
Liquor Ammonia
Fortier.....2 "
Water.....1 pint

LIQUID ABSORBENT BLISTER.

Binioidide of Mercury ...2 drs.
Iodide of Potassium....2 drs.
Water.....8 fluid oz.

LIQUID BLISTER.

Powdered Cantherides....2 drs.
Alcohol.....4 fluid oz.
Water.....4 "

PASTE BLISTER.

Binioidide of Mercury....2 drs.
Powdered Cantharides...2 drs.
Lard.....2 oz.

AMMONICAL LINIMENT.

Liquor Ammonia Fortier...2 fluid oz.
Oil of Turpentine.....3 "
Raw Linseed Oil.....3 "

COOLING LOTION. [White lotion.]

Acetate of Lead.....1 oz.
Sulphate of Zinc.....6 drs.
Water.....1 pint

COLIC DRENC'.

Tinct Opium.....1½ fluid oz.
Fluid Extract Belladonna.1½ "
Sweet spirits nitre.....1½ "
Water.....½ pint

CAMPFORATED LINIMENT.

Alcohol.....3 fluid oz.
Oil of Turpentine.....2 "
Spirits of Ammonia.....1 "
Gum Camphor.....4 drs.
Water to make.....1 pint

Sore Shins is generally, seen in young horses, the result of fast work ; there will be great lameness and soreness to the touch, with heat and swelling in front of the metacarpals.

TREATMENT.—Same as otitis.

Splints, or Splents are exostoses resulting from otitis, their usual situation being on the upper and inner part of the metacarpal, but are occasionally seen below or on the outside of the bone and sometimes on the metatarsal. Both the large and small bones are involved. (The tubercle on the small bone is sometimes mistaken for splint.)

SYMPTOMS.—Generally, but not always lameness is present, and is of a peculiar character, the animal usually walking sound, or nearly so, but when trotted will go very lame. There will be tenderness to pressure over the part, and some heat ; after a time an enlargement can be noticed. Lameness, when present, is noticed during the first, or inflam-

matory stage, and, unlike many other diseases, it increases on exercise. (Splints often appear without causing any inconvenience, and when there is no lameness and the splint is not very near the joint it can hardly be called an unsoundness.)

CAUSES.—Usually due to concussion or direct injury, (hereditary).

TREATMENT.—Same as for ostitis, sometimes the actual cautery or periosteotomy.

(In mostly all these bone diseases inflammation is set up by concussion or otherwise, between the bones, a deposit is thrown out which becomes ossified. The idea in treatment being to allay the inflammation and hasten on the process of ossification, when the lameness usually ceases.)

Caries is the death of a bone in small particles, being similar to ulceration of soft tissues. We have dry and moist caries, the former occurring in the articular part of a bone when not exposed to the atmosphere, and the latter in injured parts to which the air gains access. The dry form is noticed in spavin, ringbone, etc., and is curable only in the first stages, by rest and powerful irritation, which causes fresh material to be deposited, but if it has become at all extensive the breach will not be repaired in this manner and the only hope of removing the lameness is to produce **ANCHYLOSIS**; this results from a quantity of material being thrown out, which ossifies and unites the bones together, thus doing away with motion and irritation. This is of course successful only in joints of inextensive motion. Moist caries occur in open joint, poll evil, fistulous withers, etc., giving rise to a fetid odor from the discharge. It may be cured by scraping the diseased bone, or by applying dilute hydrochloric acid, etc.

Necrosis, or death of a bone in greater or less quantities corresponds to gangrene of the soft structures, and is as distinct from caries as mortification is from ulceration. Some of the long bones have been known to become necrosed in their entirety and actually be reproduced, the new bone forming a sheath for the old, which escapes in small pieces from holes in the new bone. Necrosis of a portion of a bone frequently occurs in our patients, a common seat of it being the lower jaw, caused by the curb chain.

SYMPTOMS.—First there will be a swelling of a doughy character, which soon becomes hard, finally bursting and discharging a foetid pus. The opening does not heal, and if probed the probe can readily be felt grating against the bare bone. The part can be cut down upon and the diseased parts removed with a bone forceps, or scraped if the disease be slight, and the wound treated with carbolic acid, etc. This condition often results from injury to other bones and requires the same treatment.

Rickets, or Rachitis, are terms used to denote unnatural softness of the osseous system in young animals. It is noticed in foals, calves and puppies; the long bones being bent in different directions, and sometimes the joints are enlarged, hot and painful. It is due to deficiency in the inorganic elements, and a want of power to assimilate them. If the animal lives, earthly matter is eventually deposited in them, they become firm but the curvatures remain.

CAUSES.—Constitutional debility, noticed in calves not allowed to suckle, and in foals when their mothers work.

TREATMENT.—Remove cause, support the bent limbs with splints and bandages, feed frequently a little lime water in the milk, attend to digestion, give a laxative, as a little castor oil and Bicarbonate of Potash made into an emulsion. Then give phosphate of lime, 5 to 10 grs., and iron sulphate, same quantities, or cod liver oil. If the milk be deficient in quantity or quality give linseed tea.

Mollities Osseum is not often seen; there is complete absence of earthly matter, generally local; cause not known.

Osteo Porosis.—Big head. Increase in size of bone without corresponding increase in weight. There is also brittleness, generally attacks the bones of the head, but sometimes those of the extremities. The vertebral column is also sometimes the seat of it. Cattle and sheep are sometimes attacked. The parts become swollen and painful to the touch. If the limbs be affected there will be lameness, easily fractured; cause not known, nothing can be done.

Osteo Sarcoma, Actinomycosis, is a tumor partly bony and partly fleshy, situated on either the upper or

lower jaw, generally the latter, of cattle, due to a fungus. Has been said to exist in horses.

SYMPTOMS.—Slight elevation which gradually grows, painful to pressure, at the last it breaks and discharges a bloody matter ; may cause no inconvenience for some time, but eventually, in most cases, it interferes with mastication ; the teeth become loose and fall out.

CAUSES.—It appears to be hereditary. It is now considered to be due to the deposit of a fungus.

TREATMENT.—In the early stages the administration of Iodide of Potash, 1 to 2 dr. doses, thrice daily, may effect a cure.

Fracture is a solution of continuity of bone. It may take place in an oblique, transverse, or longitudinal direction. A fracture is said to be **SIMPLE** when the soft parts are not injured, **COMPOUND** when there is an open wound communicating with the broken bone, **COMMUNUTED** when the bone is broken into several fragments, **COMPLICATED** when there is serious injury to some adjoining structures, as laceration of vessels, open joint, or serious bruising of the tissues.

GENERAL SYMPTOMS.—When occurring in one or more bones of a limb, great lameness is suddenly manifested, obvious deformity (with some exceptions) preternatural mobility, crepitus, and inability to bear weight on the limb. (It is a popular error to think that the bones of our patients will not unite, as the process of repair is rapid under favorable circumstances.) An early consequence of fracture appears to be an exudation of lymph, which after a time attains firmness, when it is called a callus. This is generally thrown out around the break, ensheathing it like a ferrule and is called provisional callus. Sometimes the new material is placed between the broken ends, glueing them together ; it is then called intermediate callus. In both cases there is usually some reparative material deposited in the medullary canal receiving the name of interior callus. In a varying time these deposits become composed of ossific matter, in fact, regular bone, thus the breach is repaired. Repair of fracture by a false joint is an arrestment of the process before ossification commences.

TREATMENT.—Reduce as soon as possible to prevent bad effects of continued irritation, and before inflammation and thickening result, which would impede adjustment. Put in slings, apply splints and bandages. Do not use slings in foals or cattle. Apply plenty cold water. In compound fractures the external wound makes serious differences in effecting a cure, as it is apt to cause violent inflammation and fever, terminating in profuse suppuration and gangrene. In such cases the external wound must be treated as an ordinary wound.

Dislocations without fracture, are rare in our patients, the most common form is that of the patella of the horse, the head of the femur, and knee of the dog, and that partial form which may be said to exist in knuckling over at the fetlock of the horse. **DISLOCATION** or luxation of the patella occurs chiefly in young horses, it is sometimes complete and sometimes partial, caused from slipping, walking on uneven ground, etc.

SYMPTOMS.—In complete dislocation there is total inability on the part of the animal to flex the limb on account of the leverage being destroyed. The foot appears as though it were nailed to the ground. If the animal be forced to move, the affected limb will be trailed along, the horse moving on the other three.

TREATMENT, attach a rope to the fetlock, and get an attendant to pull the limb forward, press against the displaced bone with the ball of your hand and force the bone into place. If severe sprain or rupture of the ligaments have not taken place, the animal will now walk off sound. If rupture has taken place, recovery will be slow. If the luxation recur, as sometimes it will, it will be necessary to tie the affected limb forward, sometimes necessary to elevate the foot on a block of wood or a stool and apply a blister to the inside and front of the joint. Animal to be kept in this position a few days.

Partial dislocation of patella is that condition frequently seen in young animals, sometimes in old, when the patella slips partially out and in again with a clicking noise at every step. This is due to a relaxed condition of the ligaments, generally a greater or less tumor is observed a little below the joint, called a porcelaneous deposit.

TREATMENT.—Keep animal as quiet as possible and blister the joint on the front and inside repeatedly.

KNUCKLING over at fetlock arises from relaxation of the binding ligament, from over work, etc. Sometimes seen in colts a few days old, occurring generally in fore legs.

TREATMENT.—In foals use splints and bandages carefully adjusted. In grown horses it occurs usually in hind limbs from overwork, etc. Give rest and blister.

The head of the femur may become dislocated in the ox, dog and cat. In the horse this condition is impossible. Reduction is easily effected in the dog and cat by extension and manipulation; keep parts in place by pitch bandage. In the ox treatment is not advisable, better slaughter.

SYMPTOMS.—Same as fracture, minus crepitation.

Dislocation of the knee, or of one of the phlanges is common in running dogs. Reduction is easy, but the condition is apt to recur.

Dislocation of the Cervical Vertebrae without fracture may occur, when the animal's head will be found turned to one side and depressed, presenting a bony tumor on the convex side, may be able to walk with staggering gait and knuckling over at the fetlocks. When an attempt is made to straighten the neck, the animal often becomes paralyzed, or it may cause death. If death does not result, the paralysis passes off when the pressure is removed. Treatment is generally useless. The animal may live and do a reasonable amount of work, but the neck will remain bent.

Twisting or Wry Neck may occur from a variety of causes, other than dislocation, such as bruising or overstretching the muscles on one side of the neck, or from rheumatic affection, inducing loss of function. This condition differs from dislocation in their being no paralysis caused when an attempt is made to straighten the neck.

Open Joint is caused by puncture or incision of the capsular ligament, or an injury that produces sloughing, allowing the synovia to escape. It usually causes little or no disturbance at first, but if air gains access irritation is caused

and in a period varying from two to ten days grave constitutional disturbance results. Pulse becomes hard and frequent, acute pain is evinced by tremors and sweats on the body; lameness is excessive, the animal hardly being able to put the foot to the ground, but keeps it in a constant state of motion. There will be more or less swelling. The discharge of synovia may be trifling at first, but increases as the inflammation advances, coagulating on the lips of the wound, and oozing through this, or escaping in a stream when the animal moves the limb, there will be seen a thin, watery discharge, and small abscesses form around the joint. The fever, debility, emaciation, loss of appetite, etc., increase from day to day if the local symptoms be not arrested, and finally the animal dies of exhaustion. If the discharge becomes bloody, anchylosis will be taking place, and if the joint be one of extensive motion, the animal will be useless, and unless valuable for breeding purposes, had better be destroyed.

TREATMENT.—If seen shortly after the injury, cleanse thoroughly, and if the wound be extensive stitch carefully, fill with Iodiform, cover with colodion and bandage. Give purgative, followed by diuretics, place in slings if necessary and keep quiet. Don't remove the bandage for about ten days, when union by first intention will probably have taken place. If the injury has been received some time before treatment commences and suppuration has commenced, sling, purge, give opium if much pain, irrigate with cold water, apply cooling lotion, as white lotion. Some recommend blister, etc.; feed light for some time.

Lameness may be said to be an expression of pain in one or more limbs during progression. It is shown by the manner in which the animal stands, and in its gait. If standing the position of one limb will usually be more upright than its fellow. One fore-leg advanced in front of the other suggests some tenderness below the knee, particularly in the foot; it is called pointing. Flexing backwards implies disease of elbow or shoulder, advance of both fore feet with hind feet well under the body points to tenderness of both fore feet. The lame limb will be frequently elevated in the air in cases of extreme lameness. An inclination to lie much is also a symptom of lameness.

In EXERCISE lameness may be shown in the walk, but better in the slow, easy trot. If one fore foot be affected, the head and anterior part of the body are elevated when it comes to the ground, but drop firmly when the sound foot touches the ground. In lameness of one hind leg the gait resembles that seen in lameness before, the haunch on the diseased side being raised when the foot is planted, and allowed to droop until the sound foot touches the ground. In some cases the elevation is the prominent feature, in others the depression, but in all the rising and falling are greater than in the opposite quarter; when lame in both fore limbs, the step is short, the stroke on the ground weak, the head is raised, the loins arched and the croop droops. Lameness in both hind limbs is marked by the backward position of the fore feet, the short rest on the ground of the hind, drooping of the head, and difficulty in backing. Lameness in two limbs on the same side produces a gait like the amble. When the cause of lameness exists in more than one limb, it is difficult to make the animal keep the trot. It is well in some cases that are not marked, to give exercise and then allow a few hours rest before completing examination.

In addition to determining the seat of lameness by the way the animal stands and moves, we can frequently arrive at a correct conclusion by making a manual examination, or by negative signs. If there be heat, pain and swelling in any part of a limb, discoverable by the touch, the evidence is positive, and the cause of such lameness is in such a part, but if, on the other hand, there are none of these signs, we must conclude that it is deep seated in the foot, or in a part thickly covered by healthy tissue, and we must arrive at a conclusion by negative evidence, assisted by peculiarities of gait. Lameness may be caused by a strain of a ligament, muscular tissue, or tendon, by fracture; diseased bone, cartilage, fibro cartilage, morbid condition of the skin, plugging of the arteries; accidents, as pricks in shoeing, treads, wounds, ulcers, rheumatism, and reflex nervous action as in diseased liver.

A Sprain or Strain is violence inflicted upon a soft structure with extension and often rupture of its fibres. When a muscle is strained, the injury is succeeded by pain, swelling, heat and loss of function. An inflamed muscle can

no longer contract, hence in some strains the symptoms resemble those of paralysis. The swelling of an inflamed muscle is often followed by atrophy, and sometimes by fatty degeneration of its fibres, the sarcoous elements being replaced by glistening oil particles, so that the functional power is completely destroyed. These conditions are often due to an inflammatory exudate pressing upon the tissues and interfering with nutrition, and for this reason the sooner the exudate is removed the better.

TREATMENT.—Rest, soothing applications, followed by stimulents or blisters, purgative and cooling diet, followed by good nursing.

DISEASES AND INJURIES TO THE FORE EXTREMITY.

SHOULDER SLIP OR SWEENEY, is of common occurrence. It is in the first stage a sprain of the muscles of the shoulder, the antea and postea spinatus, teres externus and sometimes the flexor brachii, causing inflammation and swelling which interferes with nutrition of the part, causing atrophy or wasting away of the muscles. This same process may take place in any muscle but the ones mentioned seem to be particularly prone.

SYMPTOMS.—The shrinking of the muscles is generally the first thing noticed. There may be lameness shown, the foot being brought forward in a rotatory motion. A hollow will be very noticeable on each side of the scapular spine. In extreme cases the shoulder joint will be seen to slip forward and backward, as it were, at each step, hence the name. It is oftenest seen in colts when just broken, especially if used in the ferrow to the plow, due to walking on uneven ground.

TREATMENT.—Recovery is slow, give long rest, blister the shoulder repeatedly or apply a strong stimulant liniment. The insertion of seatons acts more energetically, and may succeed when blisters fail; avoid working to plow.

Enlargements on the shoulder are common in farm horses, usually the result of an illfitting collar. They vary much in character. When they are soft and fluctuating

and have made their appearance suddenly they contain serum, and are called serous abscesses. If not attended to, the serum becomes converted into pus, they become hard around their circumference and soft in the centre, where the hair falls off. In some cases the walls become so thick as to give the impression of it being a solid mass. We frequently find growths in this region without well defined borders, they are fibrous in character, and consist in hypertrophy of connective tissue and are called fibrous tumors.

TREATMENT.—If fluid be present open up at most dependent part, syringe out the cavity twice daily, and inject an antiseptic lotion, as white lotion, carbolic lotion, etc. Keep wound open until the cavity is healed, might insert a piece of tow or a seaton. If there be a tumor without pus or serum dissect carefully out, stitch the wound, leaving a dependent orifice and treat as above.

Collar Galls, due to ill-fitting collars, working in hot weather, etc., are often seen. They are merely inflammation of the skin in different stages, and are often raw. In some cases the skin loses its vitality in a round patch, the outer portions of which are detached, but attached in the centre by living tissue. This is called a **SITFAST**. They may occur in other parts from similar causes, the back being the most common seat.

TREATMENT.—Remove cause, bathe well with cold water and apply white lotion. Sitfasts must be removed with the knife.

Shoulder Lameness is comparatively **RARE**. The seat may be in the joint, or in connection with the flexor brachi, affecting the bicipital groove. Inflammation of the joint is the most serious, for if change of structure results the lameness will be permanent. A severe sprain of the muscles may affect the groove and cause permanent lameness.

SYMPTOMS.—Difficulty in extending the limb. It is brought forward in a rotary manner, best marked in the trot. Stands with limb flexed but foot not pointed. In some cases heat and swelling can be detected, especially in sprain of the flexor brachi, manipulation, extending and flexing the limb will cause pain; a sort of dragging gait.

TREATMENT.—It makes little difference whether in joint or muscles, give rest, take off shoe. If very severe, place in slings, foment, use camphorated liniment or freshly-flayed sheepskin, followed by blister. Seatons are useful (put in 3). If ankylosis takes place destroy the animal unless valuable for breeding purposes.

Elbow lameness occurs from disease of the joint, sprain of the lateral ligaments or of the extensor brachi muscle. The internal lateral ligament may be sprained or ruptured by the fore-leg slipping outwards; the triceps by the leg slipping forwards. These accidents commonly occur in frosty weather. Cattle are very liable to these injuries. When the ligaments are sprained or the triceps injured diagnosis of the seat of lameness is easy, as there will be swelling, heat and tenderness of the parts, in addition to the difficulty in moving the articulation. The diagnostic signs of the joint lameness are the semi-flexed position of the leg while standing, and the excessive dropping of the head and the anterior parts of the body during action.

TREATMENT.—Rest, purgative, low diet, fomentations, liniments, followed by blisters.

Capped Elbow (shoe boil) is a tumor on the point of the elbow, caused by the animal lying with the elbow on the heel of the shoe; may consist of a serous abscess or be a fibrous tumor.

TREATMENT.—If abscess, open, if tumor, dissect out. A small wound on the point of the olecranon often gives rise to peculiar and alarming symptoms; during motion the air is, as it were, pumped into the subcutaneous tissue, inflating it first in the neighborhood of the wound, extending to a greater or less extent over the body. The head becomes enormously enlarged, eyelids swollen, and closed, nostrils so much so as to interfere with breathing; a crackling sound will be heard when the hand is pressed over the parts. This condition is not serious. Plug up the wound with tow dipped in colodion and keep quiet; in a short time the air will be absorbed and the swelling disappear. If in danger of suffocation, puncture the skin in the region of the nostrils and press the air out with the hand.

The bursæ in the neighborhood of the knees are liable to distension with synovia from injury to the tendons or from an over secretion of synovia. When arising from disease of the tendons it causes lameness, but from the latter cause no lameness will be present. The distension of the bursæ of the flexor pedis perforans muscle as called thorough-pin of the knee. The bursæ of the extensor metacarpi magnus sometimes becomes greatly distended, constituting what is called capped knee. When first observed there is generally some stiffness and pain showing that more or less inflammation is present. The symptoms should be combated by purgative, fomentation and rest, after subsidence of inflammation there is a fluctuating swelling. It may be punctured, or the fluid drawn off with an aspirator, followed by a blister, or it may be reduced by an absorbent. Puncture at the lowest margin of the inner side, so as to blemish as little as possible. Keep wound open with tow and bandage with flannel. Horned cattle, especially those kept tied are liable to have enormously distended knees from the distension of these bursæ, caused by bruising by lying on the hard floors. They may be opened with safety, and the best way is to insert a seaton right through the substance of the swelling and allow it to remain in 3 or 4 weeks and pad the knee to prevent further injury.

Carpitis, (inflammation of the knee joint) gives rise, in many cases, to a form of occult lameness, because there is often no external symptoms of disease. Inflammation is set up in the bones, which if not arrested runs on to caries.

SYMPTOMS.—The animal may go sound at first but soon becomes lame on exercise, will show little lameness when walking, but great lameness when trotted, great disinclination to canter, the limb is moved with a circumductive motion outwards, and the knee is little bent but not dragged as in shoulder lameness. These are the symptoms when lame in both legs. When in one leg the step is longer than that of the sound leg, there is expression of pain when the lame limb is flexed or extended. In some cases there is an exostosis which is usually situated on the inside.

TREATMENT.—Rest, low diet, purgative, fomentations, liniments, followed by blisters repeated, or in some cases the actual cautery.

Speedy Cut is the name given to an injury on the inner aspect of the metacarpal or the carpus, which often causes lameness. The injury is caused by the horse striking the part with the opposite foot.

SYMPTOMS.—Swelling and heat of the part, sometimes lameness; the swelling may consist of a serous or purulent abscess.

TREATMENT.—If serum or pus be present lance and treat as an ordinary abscess, rest, purge, etc. If thickening remain apply a blister, repeat if necessary. Horses predisposed to speedy cut can often be helped by careful shoeing.

Broken Knees are caused by the horse falling on account of tender feet, slipping, careless driving, striking, fits of Vertigo, etc. (It should be considered unsoundness). They are of 5 kinds, viz., 1st, skin bruised but not cut; 2nd, skin cut; 3rd, the tendon of the extensor magnus exposed and its bursæ opened; 4th, wound penetrating through the tendon exposing the articulation; 5th, one or more bones fractured.

TREATMENT.—1st form. Rest, tie head up, bathe with cold water and apply white lotion for a few days. 2nd form. Bring edges of wound together by plaster, (do not stitch), tie head up, bathe and dress with white or carbolic lotion. Of course all foreign bodies must be removed at first. 3rd form. In this form the swelling is sometimes extensive both above and below, and synovia escapes (not true open joint). Remove all foreign bodies and lacerated or partially detached tissue, give purgative, and treat as above. 4th form. If the tendon has been crushed, although neither lacerated or divided it may slough in a few days, its vitality being destroyed. Severe constitutional symptoms may be presented, when the slough is removed the articulations are exposed. The power of extension is now lost and the limb is persistently flexed. In such a case it is better to destroy the animal unless valuable for breeding purposes, as ankylosis will be the result. If treated the animal must be placed in slings and the limb kept straight by splints and bandages, the knee being left bare; use irrigation, lotions, etc. 5th form. Destroy the animal.

The causes of lameness now to be described, extending to the foot, are mostly common to both fore and hind limb. When such is not the case special reference will be made to them. They may be enumerated as follows :

Sprain of the Flexor Tendons. The so-called sprain of the back sinews is not primarily in reality a lesion of the flexor tendons proper, but consists of a diseased condition arising from over extension of the metacarpal or metatarsal check ligaments situated below the knee and hock. These ligaments arise from below the upper extremities of the metacarpal and metatarsal bones and run down the leg posterior to the suspensory ligament, become attached to the perforans tendon half way down the leg, and are placed there to prevent over extension of the tendons. This lesion more often occurs in cart horses from high calkins on toe. The ligament becomes shortened from the swelling, preventing the heel from touching the ground.

SYMPTOMS.—At first heat and swelling, pain on pressure, the tendons sometimes become involved from the extension of the inflammation ; more or less lameness will be shown. To detect slight sprain, compare limbs, it is difficult in heavy-limbed horses.

TREATMENT.—High-heeled shoe to throw the stress off the tendons, a long rest, and repeated blistering ; when shortening has permanently taken place tenotomy may be performed.

Sprain of the Suspensory Ligament, or **BREAKING DOWN**, is of two kinds, viz., an inflamed condition arising from a more or less severe sprain, and secondly, rupture, either partial or complete from more violent causes.

SYMPTOMS.—In first form, lameness, pain on pressure and there may be more or less swelling. In the second form in addition to these symptoms the fetlock pad will descend more or less, according to the severity of the lesion. The rupture may be completely through the substance of the ligament above its bifurcation, or only one of its branches, or it may be detached from the sesamoids without rupture. The lameness is often very great. The marks of the lesion always remain in the shape of a thickening.

TREATMENT.—Slings, firm plegets of tow bandaged in the hollow of the heel to support the fetlock ; irrigation and stimulent liniment, followed by blisters to remove thickening. In many cases of injury to the foot the absorbants of the leg become swoolen and inflamed. This must not be confounded with tendinous or ligamentous injuries.

Sprain of the Fetlock Joint is rare in comparison to other forms of lameness ; lameness in the foot is often mistaken for it. It is generally one of the lateral ligaments that is sprained. It may be here observed that squareness of the fetlock, obtained by well developed tuberosities on the ossuffraginis, is much to be desired, a round fetlock being very objectionable.

In inflammation of the fetlock from whatever cause, the lameness is characterised by, on the part of the animal inability to flex it, by heat and swelling (sometimes not well marked), pain on pressure or on manipulation by flexing, twisting, etc., and more or less pointing of the foot.

TREATMENT.—Rest, box stall, cold or warm water, stimulent liniment, bandage, followed if necessary by blister.

Sesamoiditis.—Inflammation of the sesamoid bursæ. The posterior part of the sesamoid bones is covered by cartilage forming a groove over which the flexor perforans plays. Both the cartilaginous pad and the tendon are liable to injury which causes severe and obstinate lameness. It may arise from injury to the suspensory ligament by the extension of inflammation, and is oftener met with in hunters than any other class of horses. This lesion is more often seen in the hind than the fore limbs and is often difficult to diagnose, owing to the swelling being slight.

SYMPTOMS.—Lameness, going on the toe unless the suspensory ligament be involved ; heat and tenderness at the fetlock with swelling of the bursæ, the swelling being different from mere wind-gall, (dropsy of bursæ) although it fluctuates upon pressure it feels tense, whereas in common wind-gall it is soft and easily moved from one side to the other.

TREATMENT.—If lameness be very severe place in slings, apply high-heeled shoe, constant application of cold water, stimulant liniment, followed by blister.

Ring-Bones.—This term is applied to the osseous deposits which are found upon the upper and lower pastern bones. They are of two kinds, viz., true and false. False ringbone is an exostosis situated about the middle of the os suffraginis not involving a joint nor causing lameness unless very large. True ringbone is one which involves a joint. We have two forms of this, viz., the high and the low, high when the pastern joint is affected, low when the coffin. Whether high or low they vary in size. The degree of lameness does not depend upon the size of the deposit, sometimes great lameness from small deposit and vice versa. Very often the segment of the ring is defective and the deposit may appear only on one surface of the bone, or on both sides without any prominence in front or it may extend all around. When the sides only are affected there is seldom the same degree of lameness as when the front is involved. They are not the cause, but the result of disease, being the effect of inflammation originating in the bones. The lameness of ringbone usually precedes the deposition of bony matter and is due to the process of inflammation in the bones or synovial membrane. It always, or nearly always, causes lameness at the commencement, but when anchylosis is completed the lameness may almost or entirely disappear. The causes of ringbone are hereditary, structural, incidental and rheumatoid. There is no doubt about hereditary predisposition, therefore I advise breeders to be very careful in selecting sires and dams, and not breed an animal that has ringbone unless its origin can be clearly traced to incidental causes. The structural tendency is manifested in horses with upright pasterns, as they receive weight in a direct line; they occur more frequently in the hind pasterns. The lameness of ringbone at first is often very irregular. In the treatment of ringbone observe how the animal puts the foot to the ground; if the toe first put on a high-heeled shoe and vice versa. Horses with very long pasterns are also liable, from the fact that they act too powerfully as levers upon the articulation. In such cases they probably arise from sprain of the ligament.

TREATMENT.—Long rest, blisters, actual cautery, followed by blister, sometimes necessary to fire a second time. Lameness often persists for a long time after treatment. If this treatment fails perform neurotomy.

Particular Lamenesses (Hind Extremity.)

(**Hip Joint Lameness** is rarely met with except as a result of scrufoulous diathesis in young animals and of rheumatism in those of mature age. Sprain of the hip joint is very rare, but it may occur. The same pathological changes are observed as in other joints, viz., redness of the synovial membrane, exudation into the cavity, and if not arrested, ulceration of the articular cartilage and laminar layer of the bones. In rheumatoid disease the tendency is to the formation of the porcellaneous deposits within, and bony vegetations around the articulation.)

Lameness in the hip, however, is not an unfrequent occurrence, still its seat is not the joint but the head of the trochanter major of the femur, over the convexity of which plays the tendon of the *GLUTEUS MAXIMUS*. Violent inflammation of the hip joint is accompanied by very severe symptoms; the animal will stand almost immovable with the foot raised from the ground, all movements causing great pain. There will be fever, loss of appetite and flesh, rapid wasting of the quarter and inability to lie down. In such cases the animal must be placed in slings. The symptoms of a mild form of hip joint or trochanteric lameness do not differ in any peculiarity of gait. There is a hop and a catch in the lame limb, and a want of movement in the quarter. The quarter of the lame side is elevated as little as possible, the other articulations being flexed with ease. In some cases heat may be felt and pain caused by pressure applied per rectum. In trochanteric lameness a distinct swelling can be detected both by touch and sight upon the quarter. In both forms atrophy of the muscles of the quarter soon appears. (May be mistaken for fracture, one gradually atrophies, the other falls in at once.)

In the **TREATMENT** of either form the high-heeled shoe is to be put on the foot, to enable the parts to be kept in a state of repose. Long rest is required, as the lameness is apt to return and in this, as in other lamenesses treatment should be resorted to before alteration of structure has taken place. Even when all lameness has disappeared great care should be taken to not put the animal to work too soon.

Sprain and Atrophy of the crural muscles. This mass of muscles consists of the rectus femoris, vastus externus and internus, and the crureus. The muscular structure is intimately connected and becomes attached to the superior surface of the patella; their action is to extend and elevate the thigh and advance it under the body.

SYMPTOMS are inability to extend the stifle and flex the hock, in fact to draw the limb forward, dragging of the toe when the patient moves. After a time atrophy takes place and a concavity presents itself between the anterior spine of the ileum and the patella.

This form of lameness requires a long rest with blistering.

Stifle Joint lameness is of two kinds, viz., that within the joint proper and that in the patella articulation. The pathology of both forms is alike, inflammation, ulceration of the articular cartilage and semilunar discs, when the joint proper is involved. Of the deposition of the porcellaneous deposit, both in the cartilage and Haversian canals of the bone when caused by rheumatic disease. In this lameness, the limb, when the animal stands, is generally bent, the thigh flexed upon the pelvis and the leg upon the thigh, so that the articular surfaces of the bones are separated and prevented from pressing against each other, but when made to move the relative positions of the bones are altered and instead of being flexed the stifle is maintained in a rigidly extended state. In lameness from disease of the bursæ-patella, the horse generally walks with his toe dragging the ground, but this is not a constant symptom, as in some well marked patella lameness the heel comes first to the ground. There is a swelling in front of the joint, which must not be confounded with an apparent enlargement of this part seen in the healthy stifle when the animal stands with the limb in a semi-flexed easy position. The swelling arising from disease, is persistent, hard and prominent when the limb is extended; but the enlargement when resting, in the healthy joint is soft, and disappears when the animal is made to move or stand firmly. The muscles of the stifle are subject to cramps, the symptoms being the limb extended and fixed to the ground. It comes on and goes off suddenly. Such cases sometimes arise from indigestion, and the liability to return is removed by a physic and tonics.

Laceration of the flexor metatarsi muscle sometimes occurs. It is attached to the external condyle of the femur superiorly, inferiorly to the metatarsal.

SYMPTOMS.—The limb is drawn up and back and the gastrocnemii muscles thrown into a relaxed condition. They sometimes make good recoveries if the muscles be not too greatly torn and the animal be not old. Long rest is required along with local stimulents or counter irritants.

Diseases of the Hock may be divided into three classes, viz., (1.) Diseases of the true hock joint (that composed of the tibia and astragalus.) (2.) Diseases of the gliding articulations formed by the cuneiform bones ; and (3.) Diseases of the ligamentous and tendinous attachments.

Bog Spavin, when caused by inflammation of the joint, is a tense fluctuating swelling in front of the hock, accompanied by heat and pain. In such cases it is an unsoundness, indicating a change within the textures of the joint. There are bog spavins, however, which may not be looked upon as constituting unsoundness, being mere dropsy of the articulation arising from some fault of conformation. This kind is most frequently found in very upright or very crooked hocks and in a weak hock of any description, because in all these forms concussion is most severely felt and exertion is likely to be injurious. It may be acute or chronic. In the acute form lameness is very great, with fever, loss of condition and inability to put the foot to the ground. In the chronic form the symptoms are not so severe, but the terminations of both are often unfavorable.

TREATMENT.—If lameness is very severe place in slings (seldom necessary). Allay inflammation by the application of cold, and anodyne lotion, follow up by pressure applied by bandage or truss ; or by blisters repeated.

What is termed **Blood Spavin** is simply a distended condition of the Vena Saphena caused by bursal or bony enlargement.

What is commonly called **Spring Hock** is an enlarged and inflamed condition of the tarsus generally, involving the structures of the whole articulation, arising from severe

sprain, sometimes pus is formed, and sometimes there is fracture of one or more bones. This injury causes intense pain and severe lameness and fever, rapid loss of condition, prevents the animal from lying down and sometimes causes death.

TREATMENT.—Place in slings, give laxative and febrifuges ; hot fomentations or poultices to the part, anodyne lotion. If pus form open and allow its escape. After the acute symptoms have subsided repeated blistering to stimulate the absorption of the callous enlargements ; seatons or actual cautery may be used instead.

Diseases of the Gliding Articulation.

Bone Spavin is a very common cause of lameness and unsoundness. (It is important that a man should be a good judge of a hock, for what may be a spavin in one horse may be merely a peculiarity of conformation in another.) A bone spavin may be defined as an exostosis, generally situated on the antero-internal and lower part of the hock, arising from inflammation of the cuneiform and metatarsal bones, terminating generally in ankylosis of one or more of the gliding joints of the hock. It is rarely seen on the outer side, as the inner side is more under the centre of gravity.

Occult Spavin is when the true hock joint is affected, in which case no enlargement can be detected.

CAUSES.—Hereditary predisposition and local causes. Hereditary from conformation, but it may arise from ossific diathesis. The local or exciting causes are sprain of the ligaments, more particularly the inter-osseous, and concussion of the bones. It is often attributed to injury by sellers, but is very unlikely to thus occur. It is the result of hard and fast work. Young animals most subject.

SYMPTOMS.—(The examiner should be a good judge of a sound hock). Prominence of the cuneiform bones should not be mistaken for spavin. Compare hocks, coarse hocks if alike should not be condemned. Look for enlargements, which are generally easily detected. If in first stages there may be no enlargement, the disease being confined to the articular surfaces ; must then judge by action. To detect

exostosis examine both hocks with fingers ; good practice to dampen and smooth the hair ; view from behind and from before. Taking front view, have an assistant hold the tail to one side, and look backwards between the fore legs and carefully compare the hocks. If long standing and lameness be present there will be wasting of the quarter. The lameness of spavin is generally characteristic, the animal going very lame and going on the toe for a few steps, and then going better, or almost or quite sound until let stand again ; he will often rest the limb when standing. In the morning after he has been in the stable all night, if stood over in the stall he will show the lameness plainly, if walked will step on toe and take short steps, if lame in foot will take long steps.

NEGATIVE SYMPTOMS will help to diagnose. If the hock be forcibly flexed and the horse immediately walked off, lameness will be shown if spavin be present.

TREATMENT.—Rest, blister, actual cautery, followed by blister ; sometimes necessary to fire twice.

Thoroughpin is a bursæ enlargement situated on the supero-posterior lateral parts of the hock, arising from disease of the flexor pedis perforans muscle, which is enclosed by a synovial sheath on the inner side of the os calcis, or from dropsy of the sheath without disease of the tendon. The fluid which fills it may be pressed from side to side, hence the name thoroughpin. It is often associated with bog spavin. It is usually found in short, fleshy legged horses with upright hocks where the os calcis is short and ill developed.

TREATMENT.—Same as for bog spavin. Some recommend puncturing for either disease but it is a dangerous practice.

Capped Hock is of two kinds, viz.: synovial and serous. The former appears as a tense, fluctuating swelling, situated upon both sides of the point of the hock. It is an unsoundness, causing lameness and sometimes the formation of abscesses from caries or necrosis of the summit of the os calcis. Serous capped hock is a serous abscess on the point of the hock, caused by pressure or violence. It is situated in the areolar tissue between the skin and tendon.

It is not considered an unsoundness if not causing lameness, and usually arises from the horse striking the point of the hock against some hard substance.

TREATMENT.—If slight, cold and absorbents. If large and serous, open and treat as ordinary abscess, but if synovial be careful about lancing. Remove cause and apply absorbents or blisters.

Displacement of Tendon of Gastrocnemius Internus is a rare form of injury, but does occur from animals kicking violently and destroying cohesion of slips of insertion and allowing tendon to slip to one side. Treatment consists in throwing the part into a state of repose by high heeled shoe, cold water and after the inflammation has subsided, blister or fire.

In injuries to the gastrocnemii muscles the foot is elevated from the ground, as in string halt, the leg being suddenly brought upwards and forward at each step. When standing still knuckling at the fetlock joint. Division of the tendo-achilles is called "ham strung," and when such an injury is inflicted the fetlock pad is brought to the ground and the limb is powerless. Such cases sometimes do well when the leg is fastened to a splint extending from the foot to the stifle and bandaged.

Curb is a sprain of the calcaneo-cuboid ligament. It can be easily recognized as an enlargement on the back of the hock from 4 to 5 inches below the point. Hyper development of the cuboid bone must not be confounded with curb. Curb is apt to cause lameness in young horses, or when of recent origin in horses of all ages. If of long standing there is seldom lameness and are considered by some not to be an unsoundness. What are called curby hocks are over bent or sickle shaped, and if associated with long calces are almost sure to become the seat of true curb.

TREATMENT.—Rest, high heeled shoe. Reduce inflammation by hot or cold applications, follow by repeated blistering or actual cautery.

Severing of Back Tendons may occur in either fore or hind limbs, more frequent in hind from accidents as runaways, etc. If both tendons be severed the fetlock pad

will come to the ground and the toe turns up at every step. If but one be severed these symptoms will be presented in a less marked degree.

TREATMENT.—Place in slings, get a shoe made long and high at the heel with upright behind reaching to hock, pad so as to not scarify, and fasten firmly to metatarsal below the hock; apply cold water and white or carbolic lotion. A good recovery will generally result.

General Treatment of Lameness. Before describing the diseases of the foot which are so numerous and important as to require special consideration, I will endeavor to give a brief description of the treatment of lameness. Make a correct diagnosis, remove cause if possible, shoe in manner to give rest and place the part in a state of repose. In all severe cases subdue inflammation before any organic change takes place which may render the case incurable, or curable only by a lengthened state of repair. For reduction of inflammation hot or cold applications to the affected part are very useful; hot are more soothing, and where there is much pain are preferable, cold will reduce swelling more quickly and may be used after acute pain has subsided. Poultices, either hot or cold, are useful. Astringents, as white lotion, or acetate of lead, 1 oz., alcohol, 2 fluid oz., water, 1 pt., bandages to promote absorption of exudate. Local bleeding is not often advisable but may sometimes be attended with benefit. Purgatives are useful in the first stages followed by diuretics and febrifuges. Restricted diet, as bran and a little hay, after the acute inflammation has subsided if lameness remain counter-irritation will be necessary. They consist of rubefacients, blisters, seatons and the actual cautery. The action of these remedies differ only in degree, in rapidity and in prominence, and not in the nature of the exudation they produce. As the name indicates, it was originally thought that no two inflammations could exist at the same time in the body, and that by producing superficial inflammation the internal would be relieved. But it is now generally considered that they produce a reparative inflammation which excites the formation of a reparative material by which breaches are united, ulcers healed and diseased action removed.

DISEASES OF THE FEET.

To prevent diseases of the feet great care in shoeing is necessary. The object being to keep the feet in as natural a position as possible.

The diseases of the feet may be arranged as follows :—1st. Diseases of bone and cartilage. 2nd. Those originating in horn producing structures. 3rd. Accidental injuries. We sometimes get lameness from diseases of the PYRAMIDAL PROCESS, caused by injury or blows on the front of the coronet, or from over tension of the extensor tendon from the use of high calkins.

SYMPTOMS.—Swelling in front of the coronet from the size of a hazel nut to a pigeon's egg, with lameness, which is often persistent. When moving he puts the heel down first, and quickly picks the foot up when the toe touches the ground. Pain on pressure and more or less heat in the part. Occasionally the skin over the part sloughs, leaving a wound which is often difficult to heal. Or a wound may be present from the first if the injury be due to violence.

TREATMENT.—Rest, low heeled bar shoe, fomentations, poulticing, succeeded by blisters or actual cautery.

If the sore assumes an unhealthy character we frequently have to apply caustics, as the butter of antimony applied with a feather once or twice. In some cases the lameness resists treatment, found to be due to caries, which spreads to the joint. In such cases neurotomy may be performed if the foot be good and strong.

Ossification of Lateral Cartilages.

This is called SIDE BONE and consists of conversion into bone of the lateral cartilages. It is most commonly met with in heavy horses and in the fore feet. The process is often a slow one and accompanied by little or no pain and causing no lameness, but occasionally we have lameness. The causes are hereditary tendency, and shoeing with high calkins. In light horses this condition is more serious, as they cannot stand fast work when so affected. In the healthy foot the cartilages can be easily felt, and when pressed they yield readily, being naturally elastic, and im-

mediately resume their normal position on the pressure being removed. When diseased they lose this character, become hard and unyielding, and they also become enlarged considerably and can be easily seen.

TREATMENT.—Rest, bar shoe, blisters, actual cautery and, if these fail, neurotomy.

Navicular Disease.

This is commonly called COFFIN JOINT lameness and is the most fertile cause of lameness in the fore feet of our better bred horses, and the symptoms are very obscure. At one time mostly all cases of obscure lameness were attributed to shoulder trouble, but after the discovery of this disease by James Taylor, all were said to arise from navicular disease. It consists of inflammation set up in the parts, usually from concussion. The cancellated tissue of the bone being usually affected, causing absorption of the articular lamellæ and articular cartilage, which is often followed by adhesion of the tendon to the bone, and sometimes degeneration of the tendon and consequent rupture. It is due to rheumatoid diathesis and concussion; is often caused by using high heeled shoes, which increases concussion by altering the position of the navicular bone, causing it to have more weight than nature intended. May be caused by pressure of a stone in the foot, or by hard and fast work on hard roads; or may result from severe sprain of the joint, or from irregular exercise and standing upon hard, dry floors a great deal.

SYMPTOMS are negative and positive. The negative symptoms are the absence of disease or injury in any part of the limb. This limits the trouble to the foot. At first the lameness of navicular disease is very irregular, one day the horse will go slightly lame, the next possibly go sound, and again go more or less lame and so on. After a time the lameness becomes more constant, and the horse usually points the foot when standing. This is a useful symptom when combined with others in diagnosing this disease, but must not be depended on too much as the horse may point the foot from other diseases, as ringbone, sprain, splint, etc., or an animal may point the foot from mere habit when he is entirely free from unsoundness, or he may point from fatigue, first one foot and then the other.

POSITIVE SIGNS.—There may be heat and tenderness in the hollow of the heel, but this is not a very constant or reliable symptom as the parts are so deep seated we cannot always detect heat or tenderness, and if you press sufficiently hard on that part of any horse he will flinch. A horse suffering from this disease usually comes out of the stable very stiff and lame, steps short and groggy; after being exercised for a time, especially if the ground be soft, the great lameness disappears. If he be affected in both feet his step is short and stilty and he appears to be rigid and bound by some stiffness of the muscles of the chest and shoulders. On this account our forefathers called the disease chest founder. There is no actual disease of the muscles, but we observe an atrophy or shrinking from diminished functions.

Contraction of the feet succeeds navicular disease. If but one foot be affected it will soon be noticed that that foot is smaller than its fellow. The animal strikes the ground first with the toe consequently wearing the toe of the shoe more than the other parts and he is inclined to stumble.

TREATMENT.—In the first stages, the disease being that of inflammation, means should be taken to arrest this process before alteration of the structures of the parts occurs. Give rest, remove the shoes, pear the foot well down at the heels, stand in a tub of cold water during the day, apply a poultice at night, and place in a nice box stall well bedded to encourage him to lie down. In about a fortnight it is well to apply a blister around the coronet, whether the lameness be removed or not. If this treatment fail to effect a cure a frog seaton may be inserted and allowed to remain for 4 or 5 weeks. If taken in time the above treatment will usually effect a cure, but if the disease be of long standing and the bone and tendon have become diseased and adherent we can readily understand that a perfect cure cannot be effected. If we fail to cure by these means further treatment will be useless and the animal must be put at slow work or neurotomy be performed to remove pain. (This does not cure the disease.) The untoward results of the operation are fracture of the bone, rupture of the tendon, sloughing of the foot, a peculiar gelatinous degeneration of the bursæ and surrounding structures; the symptoms of the latter are a bulging, doughy, elastic swelling in the hollow of the heel, and the animal going on the toe.

Laminitis or inflammation of the Feet, or Founder, is of two kinds, viz., inflammation limited to the sensitive laminæ and sole; and **ostitis**, or inflammation involving the *os pedis*, laminæ and sole from the very outset. The causes, course and tractability of the two forms differ, but the first, if not subdued in a short time, is apt to become developed into the latter.

It is one of the most painful diseases the horse is liable to. It is caused by over-exertion, inordinate feeding, drinking cold water when heated, long voyages, from being compelled to stand for a long time in a constrained position, or a sudden chill. It is often communicated to the feet from internal organs, as from pneumonia, enteritis or bronchitis. In this case the feet are effected as well as the whole surface of the body, the hair of the mane and tail being often thrown off. Laminitis arising from over-exertion and from concussion by travelling on hard roads is much more intractable than when it appears during diseases of the mucous membranes when it may pass off as a mere congestive attack without leaving any structural change. Whilst the form caused by concussion leads to **ostitis** of the most acute kind, sometimes terminating in necrosis of the pedal bone, sloughing of the hoof and a most agonizing death. In some cases not quite so severe as the last, the *os pedis* becomes separated from the walls and forces the sole down, causing a convex sole which becomes thin and weak or degenerates into cheesy and spongy matter affording but little protection to the sensitive parts beneath. The wall becomes ribbed, that is, marked with transverse rings, which differ from the healthy rings.

Acute laminitis terminates in resolution of the parts, or in that form which is termed subacute, or chronic, in suppuration and occasionally gangrene.

Chronic laminitis is that condition of the feet remaining after the subsidence of fever, or it may originate independently of an acute attack. Horses suffering from the chronic form are subject to an acute attack from the most trivial cause, and the acute form when caused by concussion frequently degenerates into the chronic. Generally the disease is confined to the two fore feet, especially when caused by concussion, but it is not unusual to find all four

feet affected, sometimes the hind feet only and rarely one fore and one hind foot. When one foot only is affected it is due to an injury to the opposite foot or limb which compels the animal to throw all the weight of that part of the body on the sound foot. In such a case the animal will suddenly be observed to throw his weight on the originally lame limb, although the wound, open joint, or whatever is wrong still be present in all its severity.

SYMPTOMS of inflammation of both feet. The horse is excessively lame, almost immovable, seems as if his body were cramped, stands with his hind legs drawn under his belly and his fore feet advanced. Sometimes sways himself backwards, elevates the toes, throws his weight on his heels for a moment and then assumes his original position. He will often groan from pain and sweats bedew the body. To diagnose a case quickly the best method is to push the horse backwards, when he will elevate the toes and throw his weight on the heels. The pulse is full and strong. In some cases he will lie down on his side, with the legs stretched out, which seems to give great relief. Whilst in others, especially in the earlier stages, he persists in standing. When the hind feet are affected the patient stands with all his four feet close together. The sufferings are even greater when the hind feet are affected, and the pain is distressing to witness. The animal stands "all in a heap," with anxious eyes, now nervously elevating one foot and then its fellow. The respirations hurried and nostrils dilated. When all four feet are affected the symptoms will be a combination of the foregoing, with local heat in all the feet, some degrees of throbbing in the plantar arteries, and tenderness upon manipulation or to the touch of the hammer.

TREATMENT.—Gentle purgatives, enemata if the bowels be loaded, sedatives, as tincture of aconite, 10 to 20 drops repeated often. Remove shoes, pare heels and sole well down, apply heat to the feet, as poultices or stand in warm water, and if he will not lie down, it is good practice to throw him. After a few days, when the acute inflammation has ceased, apply cold to the feet or stand in cold water. If he persists in lying he must be turned occasionally; if unable to urinate the catheter must be used. After a few days get him shod with bar shoes and give gentle exercise. If tenderness threatens to remain blister around the coronet.

False Quarters consists in one or more clefts or fissures in any part of the crust or wall of the foot, due to the destruction of the secretory coronary band. The horny wall or crust of the foot being secreted by the coronary substance, it naturally follows that if any part of it be destroyed, the part below the destroyed portion is no longer supplied with horn from above, which causes a chasm or fissure in the wall.

It differs from sand crack very materially, is much wider at the base and contains a modified condition of horn. It constitutes unsoundness, although the animal may not be lame, but he is liable to go lame at any time.

CAUSES.—Anything that destroys the integrity of the coronary substance, such as treads, quitters, etc.

TREATMENT.—If there be a wound endeavor to restore the parts to their normal condition by bringing the lips of the wound together and keeping so by bandages and treating as an ordinary wound. If the case be an old one and the gap in coronet healed up, little can be done but the application of a bar shoe. Blisters to the coronet will sometimes be beneficial.

CAUTION.—In examining a horse for soundness see that his feet are clean, as many tricks are played by filling cracks with guttapercha, etc., etc.

Sand Crack consists in a fissure of greater or less extent in any part of the hoof, commencing at the coronet and generally found in the inner quarters of the fore feet, called quarter crack, and toes of hind feet, rarely seen in the outer quarters. A sand crack usually proceeds by slow degrees. Prior to its appearance the horn is imperfectly secreted and is dry and brittle. Horn is built up of tubes secreted by the coronary substance and matted together, and is naturally tough. These tubes are similar to hair and are secreted by the same kind of cells. The brittle condition leading to sand cracks depends on a perverted condition of the secretory structures. Of itself horn is incapable of diseased action, being a secreted and not a formative material. A sand crack commences at the coronary band and usually extends downwards and inwards, and when it has penetrated through to the horny structures lameness is shown. Inflam-

mation is set up both in the laminæ and in the skin above the fissure, the part is very painful and the lips of the wound gape and the tissues swell. When the animal is made to move the crack is seen to close when the foot is put to the ground, and open when it is relieved of weight. During this closure the borders of the crack grasp parts of the sensitive and swollen tissues, causing great pain and sometimes hæmorrhage. Sand and dirt insinuate themselves into the wound, act as irritants, give rise to suppurative action, and in some instances to a high degree of irritative fever. A sand crack may occur through the bars but it is very rare.

TREATMENT.—If inflamed remove all sources of irritation and pare the edges of the crack if they press upon the tissues, in fact “bottom” the crack and allow the escape of pus, dirt, etc., remove the shoe and give a purgative, fomentations, poultices and rest. A fungus growth sometimes fills the crack, don’t apply caustics, as the growth is the result of inflammation, depends upon it, and will disappear on its subsidence. As soon as pain and inflammation cease, put on a bar shoe, allow sole and frog pressure, relieve pressure immediately beneath crack, pare away the upper part of crack from coronary attachment and let no direct communication exist between the fissured horn and the substance from which the new horn is to be grown, or the crack will be perpetuated. A sand crack never unites, and a new horn must be grown. Blister around the coronet. There are many devices to keep the crack from spreading, as clamps, rivets, straps, etc.

Keratoma is a horn tumor caused by the pressure of the toe clip being hammered too tightly or becoming so by the animal striking his foot against the ground. These tumors and their corresponding gaps in the pedal bone are generally found in the toes of the hind feet, but sometimes in front; they are somewhat analogous to corns in the human subject and consist in increased secretion of horn caused by pressure.

TREATMENT.—Remove shoes and pare well out and if lameness remain cut a groove on each side.

Seedy Toe is a term applied to a perverted secretion of horn at the lower margin of the os pedis, by which the crust becomes detached from the horny laminae. It is often a result of laminitis, or of the pressure of the clip of the shoe. It consists in the formation, by the surfaces of the sensitive laminae, of a cheesy or mealy, imperfect horn, which is incapable of maintaining the union between the outer wall and the laminae. Being more rapidly secreted than healthy horn it causes a separation of the crust from the laminae, and of the sole from the lower margin of the os pedis. It leaves a space between them which emits a hollow sound when percussion is applied to the wall. In extreme cases there is a bulging of the wall at the part affected. Lameness is not always present but is easily produced.

TREATMENT.—Remove all the diseased parts and promote healthy growth by the application of blisters to the coronet, and by moisture; apply a bar shoe with sole pressure and without clips.

Corns are the result of bruises involving the structures of the sensitive sole. Extravasation of blood occurs. The seat of corn is usually the inner quarter, between the bar and the wall. They sometimes suppurate.

TREATMENT.—Remove the shoe, pare well out and apply poultices. When the lameness ceases shoe so as to relieve pressure upon the affected quarter.

Thrush is a discharge of a foetid material from the cleft of the frog, usually caused by filth.

TREATMENT.—Cleanse thoroughly and apply calomel or sulphate of zinc to the affected parts.

Canker differs from thrush in the nature of the discharge, and in its course and tractability. It usually commences in the frog and rapidly extends, but may commence in any part of the sole.

SYMPTOMS.—An abundant, foetid, colorless discharge from the frog, which is large, spongy and covered with a fungoid growth. It may be confined to one foot, or two or more may be affected.

TREATMENT.—Remove the entire sole, dress the exposed surface with nitrate of silver, chromic acid, or sulphuric acid and tar, pack with tow and put on a leather boot. Constitutional treatment must be attended to, as this is to a great extent, a constitutional disease. Purgatives and diuretics, followed by tonics and alteratives, should be given to get the animal in a good state of health.

Punctures of the feet frequently occur by a horse treading on a nail, etc., when he will go lame.

TREATMENT.—Extract the nail, pare out the sole to allow the escape of pus, and apply a poultice and give rest.

In examining for lameness always remove the shoe and look for trouble in the foot, press all around with pinchers, etc. The horse will show pain when the sore part is pressed. Punctures or pricks in shoeing are of two kinds, viz.: Those actually penetrating the sensitive parts, and those in which the nails are driven so close to the sensitive parts as to cause inward bulging of the inner surface of the horn and pressure upon the sensitive parts, which causes inflammation and lameness, and sometimes suppuration. In all cases where matter exists in the foot the horn must be pared away to allow its exit, else it will burrow through the sensitive parts and escape at the coronet, and before escaping will cause great pain and lameness and violent febrile symptoms, and even death from pain and exhaustion. Sometimes we find a fungoid growth appear when the sole is pared away, which, after the inflammation subsides, can be treated with caustics. We sometimes get tetanus as a result of puncture.

Quittor consists of a fistulous wound upon the quarters and heels of the coronet, generally caused by threads, pricks in shoeing, or suppurating corns.

SYMPTOMS.—Lameness, swelling of the coronet, about the centre of which appears one or more openings discharging pus. In probing, sinuses are found leading downwards.

TREATMENT depends on the cause. If from an abscess in the foot, allow an exit of the matter through the sole; poultice the foot and apply blister to the coronet. If no

communication exists between the wound and the plantar surface of the foot one must be made by inserting a probe or bistury into the sinus and making an artificial opening on the sole; after this is done inject a solution of corrosive sublimate, 1 dr. to 2 oz. of water. This causes a sloughing of the walls and sets up a healthy action; poultice the foot. In some cases it may be necessary to remove the whole diseased structures.

Foul in the Feet is a disease of the ox and consists of inflammation and suppuration of the interdigital substances, caused by over growth of the hoof, or irritation by dirt between the clouts, and sometimes by tuberculosis. It extends, by neglect, or other causes to the articulations and bones of the feet, producing great lameness, with fever, loss of condition, etc., in extreme case, death. It is most commonly seen in the hind feet.

TREATMENT.—If attended to in time it is not difficult. Remove all loose horn under which the pus is burrowed, apply astringents, as alum water, sugar of lead lotion, etc.; poultice the foot and give a purgative. In some cases apply butter of antimony. If the bones and articulations are involved amputation may be necessary.

Foot Rot in Sheep is a disease which has been very much discussed on account of the doubt as to its being contagious or non-contagious. It is now generally admitted that it is contagious. It consists in an inflammation of the secretory structures of the foot, which causes a perverted secretion of horn accompanied by a discharge of fluid of a foetid character.

SYMPTOMS.—The sheep becomes lame in one or more feet. If the fore feet, they will be seen grazing on their knees, there is an overgrowth of horn of a soft character with the foetid discharge.

TREATMENT.—Remove all diseased horn under which pus is burrowed and pare the hooves into as natural a position as possible. Dress with a solution of blue stone or with butter of antimony.

Tumors.

We will briefly consider some of the tumors to which the horse is subject. They are divided into malignant and benign. The former, or that variety which, by its invasion of other tissues is likely to cause death, is rare in our patients, but it does exist, as in the disease called ostea sarcoma in horned cattle, and also in cancer of the sheath in the dog or the mammary gland in the bitch.

TREATMENT.—Removal by the knife when possible.

Melanotic Tumors, so-called from their black discharge, are not considered malignant in our patients. They are met with in grey, white or cream colored horses, supposed to be caused by the pigment or coloring matter of the hair, which, not being used in horses of these colors, accumulates and forms the tumors. The favorite seat appears to be around the root of the tail, and the anus, but they may appear in any part. They are sometimes found in the internal organs or brain and spinal cord. Little inconvenience is suffered unless they interfere with the functions of the limbs or vital organs.

TREATMENT.—Removal with knife if possible.

Fibrous Tumors occurs in different parts of the body and are usually caused by pressure or injury. The shoulder is a favorite seat, caused by ill-fitting collars.

TREATMENT.—Remove by knife and treat as an ordinary wound.

Epithelial Tumors, or warts, are very common and may appear on any part. They consist of the thickening of the epidermis. In the dog we often find them in the mouth.

TREATMENT.—Removal by knife or tortion. If in a critical part, as the eye-lid, great care must be observed in removal. It is well to cauterize after removal as they may otherwise reappear.

Cartilaginous Tumors generally appear in the region of the sternum from injury, etc.

TREATMENT.—Remove by knife.

Abscesses.

An abscess may be defined as a tumor or swelling containing pus, or serum. If it contains pus it is called a purulent abscess; while if the contents be serum it is known as a serous abscess. Abscesses may form on any part of the body or in the viscera, as the result of wounds or bruises; or from a poisonous condition of the blood, the poisonous material becoming localized and resulting in suppuration, or the formation of pus. The shoulders are a favorite seat of abscesses, resulting from ill-fitting collars, heavy drawing when the animal is not in a fit condition, jerking in harness, etc., etc. Purulent abscesses generally appear slowly; the first symptoms noticed being inflammation, and tenderness of the part, with some swelling; the swelling gradually increases and feels more or less hard to the touch, after a time the centre becomes soft, and the hair falls off, the skin gives way and the pus escapes. Sometimes, however, the pus is deep seated and surrounded by hard, thick walls, through which no fluctuation of pus can be felt and the enlargement appears as a dense fibrous tumor. In many cases it is necessary to explore the tumor with a probe in order to ascertain whether it be a tumor or an abscess. Serous abscesses are always the result of contusions or bruises, they appear suddenly, are more superficial than purulent abscesses, and by manipulation the contents can be easily felt to fluctuate.

TREATMENT.—For either variety open at the most dependent part and allow the contents to escape, syringe out well with water and inject a little white or carbolic lotion, or a weak solution of corrosive sublimate. Dress in this manner every day and keep the external opening pervious until the internal cavity becomes healed. A fibrous tumor sometimes develops as a sequel to an abscess, in which case it must be dissected out and treated as an ordinary wound.

Wounds.

The term implies solution of continuity of living tissues by some mechanical cause. They are classified under the following heads, viz, incised, punctured, lacerated, contused, gunshot and poisoned.

Incised Wounds are those made by a clean cutting instrument. The textures being divided evenly and smoothly without tearing or bruising of the parts, hence the hæmorrhage is greater than in most other wounds. If the wound be parallel to the muscular fibres there will be little gaping.

TREATMENT.—1st. Arrest hæmorrhage, sometimes it is necessary to ligate the blood vessels, especially arteries.

2nd. Remove all foreign bodies and cleanse the wound thoroughly by sponging with warm water (sponge carefully, or let the water run over the wound from the sponge.)

3rd. Bring the lips of the wound together by sutures. Good practice to leave the wound open for a few hours to allow the escape of blood and serum. Always leave an opening at the most dependent part of the wound to allow the escape of pus. The interrupted suture is generally the best. When the incision is deep and transverse, gaping will be greater, and it is well to use quilled sutures. When the cavity is cupped make a dependent opening; in which case sew up the whole wound. Keep clean and apply a weak astringent lotion, as carbolic acid, 1 to 50, or white lotion. Should the sutures give way foment and cleanse. If the sutures hold remove them in about ten days.

CONSTITUTIONAL TREATMENT.—Purgative, low diet and quietness.

Punctured Wounds are produced by sharp or blunt pointed instruments, generally deep, with the apertures of entrance small, and the inner structures more or less torn. They are more liable to be followed by tetanus than other wounds.

TREATMENT.—If the wound be shallow, keep clean by syringing and using an astringent lotion and treat constitutionally the same as for incised wounds. In more serious cases the opening must be enlarged, to allow the escape of serum, pus, etc. Remove all foreign bodies and partially detached tissues, stop hæmorrhage, if any, foment; poultice if practicable. Sometimes it is necessary to put in slings. If unhealthy granulations (proud flesh) appear, use caustics. Don't tie rags around wounds as they irritate the parts.

Contused Wounds are injuries inflicted by some blunt instrument without perforation of the skin, and the consequences vary according to the severity. The effect may be very short, as from a horse interfering, but if constantly repeated structural change will result. This change varies in degree. There may be rupture of a small vessel and consequent effusion; a large vessel may be ruptured and considerable quantities of blood be extravasated, which will coagulate. There may be the formation of a serous abscess, or a purulent abscess.

TREATMENT.—If the contusion be slight, fomentation will suffice. If much blood be imprisoned, open and remove it. When sloughing is likely to take place, hasten by poulticing, and when pus is formed open the abscess. Constitutional treatment the same as above.

Lacerated Wounds. When the skin is divided, lacerated and torn and the edges are ragged.

TREATMENT.—Make dependent opening, remove all partially detached tissue and, if practicable, stitch the wound and syringe with carbolic lotion.

Gunshot Wounds. It will not be necessary to enter minutely into this class of wounds as they seldom occur. The treatment is to remove shot or ball, if possible, and treat as punctured wounds.

Wounds of the Abdominal Walls. On account of the important structures they involve and the danger of intestinal protrusion, require special management. They are of two kinds, viz.: Shallow and deep. The shallow, involving muscles but not penetrating into the cavity, are apt to cause abscesses. The pus forming in the wound and not gaining exit on account of the smallness of the opening, burrows between the fascia and muscles and forms abscesses.

TREATMENT.—See that the pus escapes and keep the wound open until the internal parts are healed. Dress with carbolic or white lotion.

The deeper punctures, penetrating the cavity, must be treated with a view to prevent protrusion of the intestines; allow the escape of pus and serum, stitch if practicable, and

support by bandages. If the peritoneum is ruptured and the intestines protrude, return the intestines, suture and bandage, and treat to prevent peritonitis by administering opium, fomenting the part, being careful not to let the water into the abdominal cavity. Give injections and keep quiet.

Frost Bites. Sometimes the tissues of the coronet and heels become frost bitten to a greater or less extent. The parts lose their vitality and become pale, insensitive and shrivelled, and will slough more or less, according to the extent of the injury.

TREATMENT.—Poultice and apply carbolized oil, 1 to 40 or 50.

Burns and Scalds are divided into three classes. 1st. Those producing redness. 2nd. Those producing vesication. 3rd. Those producing death of the parts. The 3rd class is the only serious one. It causes more or less constitutional disturbance and sometimes death from the shock. The surface of the part will become pale and leathery, the hair falling off and there will be a thin serous discharge. In a few days the skin sloughs off leaving a sore that is hard to heal, and it usually leaves an ugly blemish.

TREATMENT.—Use carron oil freely and dredge it over with flour to exclude the air.

Poisoned Wounds are usually caused by bites of venomous insects, and are not common.

TREATMENT.—Dressing with a dilute alkali, as baking soda, will be beneficial, as the poison is usually acid.

Results of Wounds. The unfavorable results of wounds are erysipelas and tetanus. Erysipelas may be defined as inflammation of the skin and subcutaneous areolar tissue, characterized by a diffused swelling, which has a remarkable tendency to spread, and is dependent upon some unascertained alteration in the blood. We have two forms, cedematous and phlegmonous.

Cedematous is the most common form of traumatic erysipelas, and generally succeeds wounds in the extremities in debilitated subjects.

SYMPTOMS.—Generally about three or four days after receiving an injury the shin around the wound becomes swollen and tender, hot and painful. The swelling rapidly extends and embraces, in some cases, the whole surface of the limb. The swollen surface pits on pressure where much areolar tissue is found, but where the subcutaneous tissues are firm and hard, the impression of the finger is not so well marked. The pulse becomes quick, rigors are present, the animal feverish, loses his appetite, and pain is manifested by lameness, if the disease be in a limb.

Phlegmonous Erysipelas is a much more violent form than œdematous and is expressed by a great amount of constitutional disturbance. The temperature runs high; the tendons and ligaments become involved, the pain is excessive, the swellings hard and tense and occupies a large surface. After a few days pus forms in various parts.

TREATMENT.—In the œdematous form give a purgative, foment swollen parts frequently and cover by bandages. When the purgative has operated, give diuretics and antiseptics, as 3 dr. doses hyposulphite of soda, and tonics, as the tincture of iron, and feed well.

In the other form give a purgative, combat fever by aconite, and give tincture of iron 1 to 2 fluid drs. every four hours. Foment the parts. If abscesses form they must be opened.

Tetanus consists in tonic spasms of the voluntary muscles which are long continued and uncontrollable. It is frequently a result of an injury, but sometimes occurs without obvious cause. Hence it is called traumatic and idiopathic tetanus. It is supposed to be due to a parasite. The horse is the most liable to tetanus of all the domestic animals. It is seldom seen in ox. Is sometimes the result of a trivial injury, as a saddle gall, scratches, etc., but is more likely to follow a punctured or lacerated wound especially when nerves are injured; or a prick in the foot. The operations which are sometimes succeeded by tetanus are castration, docking, insertion of setons, operation for hernia, etc. A blister has been known to cause it. There are several varieties of this disease; when the muscles of mastication are involved it is called **TRISMUS** or **LOCK-JAW**; when the superior cervical and dorsal muscles, causing

the head to be elevated and the spine curved downwards it is called *OPISTHOTONOS*; when the muscles of one side are affected causing the head to be drawn sideways, it is called *TETANUS LATERALIS* or *PLEUROTOTONOS*. In very rare cases the inferior muscles are chiefly affected, causing the head to be drawn towards the breast and the spine arched upwards, this is called *EMPROSTOTONOS*. The two first mentioned forms are mostly seen in the horse and usually in combination. Amongst the causes which may produce tetanus in addition to the irritation of wounds, are worms in the stomach and intestinal canal, collections of sand in the large intestine and uterine irritation.

SYMPTOMS.—More or less stiffness over the whole body; the animal will champ his jaws and grind his teeth; often a flow of saliva from the mouth, breathing accelerated and nostrils dilated, the nose protruded. The *membrana nictitans* pushed more or less over the eyes, which are withdrawn into the sockets. He is very nervous and excited. If suddenly disturbed the muscles will be seen to twitch or tremble and feel very hard, almost like a board to the touch, the tail is suddenly elevated, the eye withdrawn into the socket and the white of the eye shown, and the *membrana nictitans* will be noticed to shoot suddenly over the eye. The jaws are usually locked. The pulse at first is not much affected but becomes hard and accelerated. The position of the body in all cases of tetanus is regulated by the action of the most powerful muscles affected. Sometimes the animal is unable to stand.

TREATMENT.—If occurring from an operation or injury sooth the parts by fomentations or poulticing and applying the solid extract of *Belladonna*, and remove all foreign bodies. Treatment in tetanus is often unavailing and discouraging. The idea is to keep the animal as quiet as possible. Place in slings if necessary, let no one near him but his attendant, administer a purgative if possible, give soft food. If he cannot move his jaws at all give milk and eggs to drink, in which give 20 drops of prussic acid (Scheele's strength) 3 times a day, hypodermic injections of $1\frac{1}{2}$ grs. of eserine is often beneficial by aiding the peristaltic action of the bowels; quietude is necessary. In cases that recover it usually takes about six weeks for the spasms to entirely disappear.

DISEASES AND INJURIES TO THE FACIAL REGION.

Wounds of the Lips must always be treated with a view to bring about perfect union of the divided parts. Be as conservative of tissue as possible.

Tumors of the Lips sometimes occur either spontaneously or from stings and are not often serious. They will generally suppurate and burst.

Lampas is a term applied to a swelling of the gums, back of the upper incisors in young horses. It is caused by the natural congestion of the gums during teething. It is good practice to bleed slightly in some cases, but generally it is better left alone.

Sporadic Aphtha or Thrush is a crop of small vesicles or small pustules, which occasionally appear in the mouth of horses, particularly during the process of dentition. In cattle, sheep and pigs, this condition is not uncommon, the buccal membrane peeling off, leaving the parts sore and painful, and rendering the animal unable to feed without difficulty.

TREATMENT.—Apply cooling and astringent lotions, as alum water, or a solution of borax. If ulcers form apply nitrate of silver solution, 5 grs. to the oz. of water.

Paralysis of the Lips occurs from injury to the 7th pair of nerves caused by wearing ill-fitting bridle or head stall, or other causes. Inflammation of the nerve is set up, followed by loss of function.

SYMPTOMS.—The lips hang elongated and powerless, saliva flows from the mouth. When attempting to drink he shoves his nose to the bottom of the pail, and in feeding he gathers his food with his teeth only. He champs while eating and often drops his mouthful.

TREATMENT.—Remove the cause, feed soft food. Foment the parts and apply good sharp stimulent liniment to the muscles of the face and cheeks. If this be insufficient blister the parts. May give iodide of potash internally. Sometimes it is necessary to insert a seaton. These cases are generally curable.

Open Parotid Duct. Steno's duct leads from the parotid gland to the mouth, winding around the jaw in company with the submaxillary artery; being superficial it is liable to injury from kicks, blows, etc., and by ulceration of its coats, when involved in an abscess of strangles. From whatever cause it is opened saliva is discharged from the wound instead of flowing into the mouth. When the animal is not feeding the flow is slight, but when feeding the flow is most abundant and in ratio to the dryness of the food.

TREATMENT.—If the injury be not recent the mere closing of the wound is insufficient, because the duct between the wound and the mouth will be closed by inflammatory swelling. The first step is to open this, with, if possible, a probe. If this can't be done, an artificial opening must be made by inserting a seaton and leaving in 4 or 5 days, or until suppuration is induced in the channel. It is then withdrawn and the external wound brought together by suture and collodion thickly applied. Feed soft food, as dry food causes too much salivation. If this treatment fail the gland should be destroyed by injecting into its substance the following solution. Nitrate of silver, $\frac{1}{2}$ dr., nitric acid, 1 fluid dr., water, 1 fluid oz., into all the ramifications of the gland.

Salivary Calculi are sometimes found in the parotid, submaxillary and sublingual ducts. They are caused by an accidental nucleus, such as a small piece of hay or corn penetrating the canal, to which the salts of the saliva adhere, forming roundish concretions which check the flow of saliva; the canal becomes distended with saliva.

TREATMENT.—Remove by manipulation, if possible, or make an opening with the knife and treat the same as for open duct. (Sometimes an oat gets into Steno's duct, causing it to appear as a pendulous sack on the side of the of the jaw. The obstruction must be removed through the mouth.)

Ptyalism or Excessive Salivation sometimes occurs when young horses are teething, or from any irritation to the mouth, or from excessive doses of mercury; green food charged with mustard, white clover, etc., or from irregular teeth.

TREATMENT.—Remove the cause, if possible, wash the mouth with cold water, a solution of alum or borax, or with vinegar.

Glossitis, or inflammation of the tongue, when occurring as a primary disorder is due to injuries, scalds, or some chemical irritants, as administering irritating medicine as ammonia or turpentine insufficiently diluted. The tongue is sometimes injured by the bit, or may be bitten by the animal itself or wounded by sharp or irregular teeth. If the injury be caused by irritant medicines the organ becomes very much swollen and protrudes from the mouth, its covering peeling off, the cheeks being in the same state.

TREATMENT.—If wounded, dress carefully, removing as little as possible, bring into apposition with sutures. If from irritants use cooling lotions as vinegar and water, which serves two purposes, 1st, neutralizing any remaining alkali; 2nd, forming a grateful application to the inflamed organ. A horse with half a tongue will feel moderately well. In drinking he will shove his nose deeply into the pail.

Ulcers of the Tongue are often caused by diseased or irregular teeth, or rusty bits, or they may appear as a secondary affection depending upon indigestion.

TREATMENT.—Remove the cause, dress with nitrate of silver, borax or alum. Horned cattle are subject to induration of the tip of the tongue and it is generally incurable. It arises from no ostensible cause. As it interferes with prehension he doesn't feed well and he loses flesh. He should be slaughtered as early as possible.

Paralysis of the Tongue is generally present when the brain is extensively diseased. or suffering from the pressure or tumors, pus, etc., or it may be induced by forcible traction used when giving a ball, etc.

SYMPTOMS.—The tongue hangs out of the mouth and the animal is unable to withdraw it and saliva dribbles from it.

TREATMENT.—Force the tongue into the mouth and keep there by bandage around the lower jaw.

Abscesses form at the root of the tongue and must be opened or lacerated with the finger.

Parrot Mouth is not a disease but a deformity. The upper incisors project beyond the lower, the teeth grow long, and if the lower teeth interfere with the bars of the palate they must be dressed down.

Irregularities of the molars are of much greater importance and must be regulated by clipping and rasping.

Caries of the Teeth or decay, is almost exclusively confined to the molar teeth, although the incisors may be affected. It may commence in the fang, crown or neck of the tooth.

SYMPTOMS.—Are those of pain. The horse, whilst eating, will suddenly cease masticating, perhaps drop the food from his mouth, rest his cheek on the manger, holding his head to one side, and when the pain ceases will commence to eat again, or he may quid his food, throwing out large boluses mixed with saliva. The breath of a horse with caries of the teeth is generally foetid. Caries of the fang is usually denoted by an enlargement of the bone which contains it. Caries of the fang in the superior maxilla is usually accompanied by a foetid, purulent discharge from the nostrils of the affected side. The fang may become absorbed without suppuration, in which case the tooth sinks below the level of its fellows.

TREATMENT.—Extract with forceps if possible. If not, trephine and punch out. All the molars except the last may be thus removed. After removal in this way the cavity will fill in 5 or six weeks.

DISEASES OCCURRING DURING DENTITION.

Occasionally the crowns of the temporary molars are not shed, remaining fixed between the permanent ones. This is common in cattle at about $2\frac{1}{2}$ years old, and in the horse at 3 or four years old, as that is the age at which he sheds his temporary molars and gets his permanent ones. If animals at the ages stated are off their food, always examine their first three molar teeth, and if any temporary crowns be present remove with forceps.

Dentition Cough.—At three or four years old horses are subject to what is called dentition cough. This is caused by the irritation of teething, especially the sixth molar (at 4 years) extending to the larynx. The cough is noticed more particularly in the morning when the horse begins to feed, it is loud, sonorous and prolonged. In some cases we have a tendency to diarrhœa associated with the cough.

TREATMENT.—Careful feeding on crushed oats, hay, grass and roots. Give Bicarbonate of Soda, in 2 dr. doses and if the fæces are foetid give Hyposulphite of Soda in 3 dr. doses, and gargle the mouth.

Dentition Fever is an affection due to the same cause as the last and occurs during the active stage of dentition, when some horses suffer from a degree of constitutional disturbance, loss of appetite, debility, unthriftiness and a tendency to diarrhœa, with excited pulse, but without cough or any other symptom indicating that the fever is due to disease of any internal organ. On examining the mouth the gums are found to be red, swollen and tender, and the secretion of saliva much increased. Horses of 3 and 4 years are more subject to this trouble.

TREATMENT.—Rest and good care; may lance the gums to relieve congestion.

Supernumerary Teeth.—What are called wolf teeth are often seen in front of the molars in the upper jaw. They have been supposed to effect the eye, but this can scarcely be the case. They can cause no inconvenience unless very large but may as well be removed.

(The dental nerve is a branch of the ophthalmic, and from this fact wolf teeth have been claimed to cause moon blindness to an animal that is predisposed.)

Nasal Gleet. The faceo-frontal sinuses may be looked upon as one cavity, divided into frontal, maxillary and sphenoidal compartments. They communicate with the nasal sinuses by a small opening. In catarrhal affections the lining membrane of these sinuses, by the extension of the inflammation of the schneiderian membrane, becomes

diseased, and pours out a quantity of pus, which, lodging in the various compartments of the sinuses, becomes a source of irritation, constituting what is called nasal gleet. It may arise from other causes than catarrhal affections (but this is the most common), such as external injuries, caries of the upper molars, diseases of the facial bones, collections of inspissated pus, etc., and in horned cattle and sheep from the lodgement of the larvæ of the *œstrus bovis*.

SYMPTOMS.—Generally an irregular discharge from one or both nostrils. The submaxillary glands generally enlarged but loose, but sometimes hard and adherent to the bone. The breath from the nostrils is generally offensive. When the sinuses are filled with pus there will be a dull sound on percussion, and sometimes a fullness can be noticed on the face.

TREATMENT.—In the early stages tonics, as sulphate of copper, in 1 to 2 dr. doses three times a day and good care may effect a cure, but if pus be lodged in the sinuses (which can be ascertained by inserting a small gimblet into the cavity), we must trephine. Remove the pus, syringe out well with water and dilute carbolic acid, 1 to 50 or 60. He must have constitutional treatment as tonics and good food.

Choking in the horse is generally caused by the lodgement of a quantity of dry food, such as oats, cut hay or chaff, swallowed rapidly by a greedy feeder, or, by a piece of potatoe, carrot, turnip, apple, etc., or by a large sized ball wrapped in coarse paper becoming lodged in the pharynx or œsophagus.

SYMPTOMS.—All at once he leaves off feeding and makes all possible efforts to complete his imperfect swallow and gulp down the cause of his distress. Should he not succeed his throat and neck become, through gulping and ineffectual efforts spasmodically drawn up and he sometimes gives a loud shriek. If he attempts to swallow water it will return through his nostrils. These urgent symptoms are not always present, and depend upon the position of the obstruction. When in the pharynx the coughing and slavering are very violent. When in the cervical portion there is a visiable enlargement along the course of the œsophagus. When in the thoracic portion of course no enlargement can be seen and

the most urgent symptoms are not present. The general symptoms are anxious expression, sunken head, tremours, sweats over the body and exhaustion. He may want to drink and will do so until the tube becomes full from the obstruction to the pharynx which will cause violent coughing and attempts at vomition, the most of the water returning through the nostrils.

In the ox the obstruction is usually an apple or a root, as carrot or turnip. In the dog pieces of meat, bones and needles are generally the cause of choking.

SYMPTOMS in the ox are bloating, champing of the jaws, copious flow of saliva and attempts to swallow, and a cough, causing forcible expulsion of fæces and urine. Tympanitis is sometimes present in the horse. In the dog violent retching and coughing with staring eyes are the usual symptoms.

TREATMENT.—In all cases where the obstruction can be reached remove it by the hand, or by forceps if the obstruction be sharp pointed; this form is most commonly seen in the dog. If in the cervical region manipulate, and if it can be moved at all it will generally disappear. Might give a little oil. If possible get it either up or down by hand. If this cannot be done use the probang. The horse requires a smaller one than the ox, and it is difficult to pass in the horse; he has to be thrown; œsophagotomy may have to be performed.

Dilatations and Strictures of the Œsophagus.—These two conditions are frequently associated and may be caused by scalding or the pressure of tumors. Stricture of the whole tube may be due to inflammation of its walls. In stricture there will be a great tendency to choke, with a discharge of masticated food from the mouth.

TREATMENT.—Pass probangs of various sizes in order to dilate the tube, and feed carefully.

Crib Biters and Wind Suckers.—These are vices but predispose to diseases. A crib biter seizes the manger or some other object with his teeth, arches his neck and makes a belching noise, after a time the abdomen becomes visibly enlarged. Some thrive moderately well, while others are always unthrifty, dry in the coat, and hide bound. A chronic cribber may be easily recognized by the way his incisors are worn and rounded at the anterior borders.

A wind sucker smacks his lips, gathers air into his mouth, extends his head, or presses it against some solid body, arches his neck, gathers his feet together and undoubtedly swallows air, blowing himself out sometimes to a tremendous extent. Of the two vices this is the worst, a wind sucker being more subject to colic and indigestion, etc.

To prevent crib biting buckle a strap rather tightly around the neck, and for wind sucking a strap studded with sharp points of iron opposite the lower part of the jaw is the best preventive. Want of work, indigestion, and the irritation of teething are generally the causes of these vices.

DISEASES OF THE EYE.

Simple Ophthalmia or Conjunctivitis is caused by a blow, bites of insects, common cold, or the lodgment of a foreign body in the eye. Inflammation of the superficial structures is manifested by closure of the eyelids swelling of them and increased secretion of tears, which flow down the cheek, scalding the skin to such an extent that it soon becomes divested of hair at every part over which the tears flow. The eye is retracted and partly covered by the membrana nictitans. If the eyelid be turned up the conjunctiva will be found to be congested and covered by red streaks. The surface of the cornea is dim and blue looking, with gradually increasing opacity.

TREATMENT.—If a foreign body be in the eye remove it, foment and exclude the light. May bleed from the angular vein, or scarify the inner surface of the lids. Apply Belladonna in the form of paste to the eyebrows and outside of the eyelids, or atropia sulphate, 2 grs., distilled water, 1 fluid oz. Give a purgative, followed by diuretics. The opacity of the eye is due to an exudate thrown out between the layers of the cornea, not to a film or scum, upon the external surface of the eye, as it appears to be. If the inflammation is due to an injury the opacity will gradually extend from the seat of the injury to the circumference. If due to other causes it will extend from the circumference to the centre.

Nebula-Albugo.—A partial opacity sometimes remains after the removal of the general dimness, or film, as it

is sometimes called. The opacity of the cornea, caused by an injury, often remains as a permanent blemish. An opacity of this kind is at first of a bluish tinge and is called a nebula, as it becomes older it turns to a pearly white color, and is called an albugo. Occasional touches of the solid nitrate of silver, or a solution of it applied with a camel's hair pencil, will hasten the absorption of the surrounding lymph. "The practice of blowing irritating matter, as burnt alum, pounded glass, etc., through a quill, cannot be too highly condemned, as it is calculated to irritate the whole surface of the conjunctiva, entail suffering and do harm." These opacities are only, when sufficiently large, or when so situated as to interfere with vision, to be regarded as unsoundness.

Staphyloma is a disease of the eye, so named from its being thought to resemble a grape. In this disease the cornea loses its transparency, rises above the level of the eye, and even projects beyond the eyelids in the form of a whitish colored tumor, which is sometimes smooth and sometimes rough on its surface. It is not a rare disease amongst dogs. It is occasionally seen in horned cattle, but seldom in the horse, except in the spurious form which consists in incision of the cornea propria, allowing a bulging outwards of the cornea elastica. In the dog it occurs from two causes; 1st, a growth on the cornea; 2nd, dropsy of the aqueous chambers. The first may be caused by an ulcer, the progress of which should be stopped by touching with a pencil of nitrate of silver, and afterwards remove the thickening with the knife. The second form is best treated by puncturing and allowing escape of the contained fluid.

Glaucoma is a disease in which the vitreous humor loses its transparency and assumes a blue color. It is very uncommon, and is usually associated with cataract or amaurosis.

Amaurosis is a disease of the optic nerve and its expansion, the retina, whereby they lose the power of receiving and transmitting the impression of objects to the great nerve centre, the brain.

SYMPTOMS.—The pupil is dilated, round and motionless, the eye glassy in aspect, the eyelids open more than usual. The animal may be said to stare. The gait, and motion

of the ears are indicative of blindness. It is possible to have it in but one eye, but this is very rare in the lower animals, and is generally indicative of brain trouble. Excessive hæmorrhage has produced sudden and permanent blindness in both horses and cattle. Excessive discharge of secretions, as in polyuria, or excessive perspiration, due to excitement or viscidness, may cause it. To detect, place the animal in strong light, cover the eye with the hand, when the hand is removed, if the eye be sound, the pupil will contract, if diseased, it will not.

Strabismus—Squinting—is irregular actions of the muscles of the eye. It never occurs in the lower animals except as a sign of another disease, as indigestion, tetanus, and blood poisoning, etc.

Ectropium, or eversion of the eyelids. The eyelid is drawn away from the eyeball, its conjunctival surface turned out. The ball, being thus deprived of the protection of the lid, is exposed to constant irritation, by which a chronic conjunctivitis is set up, weakening the eye and giving rise to specks and vascularity of the cornea.

TREATMENT.—If not very extensive, it may be reduced by the nitrate of silver. If this be not sufficient, excise an elliptical piece of conjunctiva.

Entropium, or inversion of the eyelids, is the converse of ectropium. The free edges of the eyelids and the eyelashes are turned in against the eyeball, which they keep in a constant state of irritation by the friction they exert upon it. Very often entropium is congenital, but may occur from relaxation of the integument of the eyelids, and a spasmodic contraction of the muscles which separate the lids.

TREATMENT.—Excise an elliptical piece of the skin and stitch up the wound.

Warts on Eye-lids are not uncommon. If they have a constricted neck, excise or ligature. If broad at the base use strong acetic acid or butter of antimony.

Wounds of the Eye-lids are to be treated on conservative principles.

Warts on the Membrana Nictitans are to be removed by the knife first transfixing the membrane by means of a suture or the tenaculum.

Falaria Oculi are small thread-like worms, sometimes found in the aqueous humors of the eye, especially in horses pastured on low damp ground.

SYMPTOMS.—Conjunctivitis, the cornea obscured by nebulous effusion, the eye-lids closed, and intolerance to light. On close inspection a small, white, thread-like worm can be seen floating in the aqueous humor.

TREATMENT.—Puncture the cornea at its upper and outer margin and allow the parasite to escape with the aqueous humor.

Fungus Hæmatodes consists of a dark colored vascular tumor growing within the orbit, appearing at first as a red spot at the posterior part of the eye, becoming larger, it involves the eye and the surrounding orbital bones. The tumor is malignant in its nature and so infiltrated with blood that it looks like a blood clot, is of rapid growth and if not entirely removed at an early stage, admits of no cure. It is ofteneest seen in the ox but is sometimes met with in the horse.

TREATMENT.—Remove everything in the orbit and cauterise the parts.

Periodic or Specific Ophthalmia or moon blindness is a constitutional affection arising from some cause acting primarily on the constitution and secondarily on the organ of vision, terminating in an opacity of the crystalline lens, called cataract.

SYMPTOMS.—The attack is generally sudden and without apparent cause and the eye presents the general symptoms of inflammation. The dullness which is present spreads from the margin to the centre. The pupil becomes contracted more and more and the conjunctiva intensely reddened. The inflammation is apt to move from one eye to

the other, and for this reason, and on account of its recurrent nature it has been called gouty ophthalmia.

TREATMENT.—A cure cannot be effected but aid may be given by treating as for simple ophthalmia. The inflammation may subside and the eye regain quite, or almost its normal condition and remain without active disease for a variable time, or in a few days the inflammation may again appear. There may be weeks or even months between the attacks; after several attacks we usually have cataract form and consequent blindness. In rare cases one attack destroys the eye and forms cataract.

It is somewhat difficult to distinguish between simple and periodic ophthalmia. The inflammation in periodic is not generally so acute, but will not as readily yield to treatment. The pupil does not regain its original form but looks smaller than its fellow and the eye seems smaller than natural, and the eyebrow and upper lid usually have a wrinkled appearance; a dimness of the cornea remains.

Cataract consists of an opacity of a part or the whole of the crystalline lens or of its capsule. It is divided into true and false; false consists in opaque deposits of lymph, blood or pus on the anterior capsule, obstructing the pupil. The distinction of the various kinds of cataract as capsular, lenticular, capsulo-lenticular, true and false is not of such great importance to the Veterinarian, as total blindness is preferable to partial in the horse.

Cataract is usually the result of periodic ophthalmia, but may proceed from other causes as an injury, or appear without any assignable cause.

Dislocation of the Eyeball is sometimes met with, especially in dogs, from fighting, etc. It sometimes hangs pendulous on the cheeks. In such cases carefully return the eye, and strange to say it generally regains its usefulness.

Removal of the Eyeball is seldom necessary except in malignant disease or in the enlargement of the whole organ preventing closure of the eyelids. If the cornea be removed the humors, lens, etc., escape, the eye will collapse and the various coats become adherent.

DISEASES OF THE HEAD, NECK, VEINS, Etc.

As the ear of the horse is almost exempt from disease, except from injury, we will pass them over. Dogs occasionally suffer from ear trouble.

Poll Evil is a fistulous ulcer, situated behind the ear, caused by injury, or the habitual use of the tight bearing rein. It may at first be a soft tumor, surrounded by swelling, with stiffness of the neck, or it may merely be a serous abscess.

TREATMENT.—Before pus forms, allay the inflammation by fomentations and give a purgative, and reduce the swelling by a blister or iodine ointment, do not puncture. If suppuration be established, open as soon as possible at the most dependent part and treat as an abscess. If the abscess has already burst and is discharging a foetid pus, we know we have a serious case. The sinuses must be all thoroughly explored and opened to their very bottom, and the bone scraped if diseased, and dressed with a solution of corrosive sublimate, about 5 grs. to the oz. of water. A thin layer of the parts laid open will thus be destroyed and the whole made into a common wound, to be treated as such. When caused by the tight bearing rein, it is deep seated, often involving a joint, causing ankylosis and consequent stiff neck. Sometimes in operating, we have to cut the ligamentum nuchæ clean across. It will unite along with the other tissues.

Fistulous Withers resembles poll evil in all particulars except its seat and the parts involved. Is caused by bruises, ill-fitting saddles, etc. The treatment is the same as for poll evil. In some cases the sinuses run down between the scapula and ribs, in which case a cure is very hard to effect. The spines of the dorsal vertabræ are often diseased. In treating, as in poll evil, when necessary to cut, don't spare the knife, but get to the bottom of each sinus.

Inflammation of the jugular vein sometimes occurs as a sequel to bleeding, especially when there is a constitutional predisposition to local inflammation. The exciting causes are using a rusty fleam, bungling in the operation, or the animal may disturb the wound by rubbing, etc.

SYMPTOMS.—The lips of the wound separate and discharge a bloody fluid, the surrounding parts become inflamed, and the vein, in its course to the head feels like a hard cord of considerable thickness. Sometimes abscesses form in different parts along its course, which can be detected by fluctuations, etc. In some cases the vein may regain its normal condition, but generally it becomes converted into an impervious cord.

TREATMENT.—If abscesses form open them, foment continuously and follow by blisters. Give a purgative and diuretics. The animal must not be turned to pasture, as the collateral circulation is not sufficient to carry the blood from the head whilst it is kept in a depending position during grazing.

Varicose Veins are not often seen in our patients, and are those in which a dilatation exists, due to an obstruction, or a relaxation of the coats of the vein. It occurs in the jugular as a result of bleeding, and in the vena-saphena by pressure from bone spavin. The veins of the extremities of horned cattle present varicose dilations along their course, in the form of sacculated knotty protuberances, on various parts of the vessels. The contained blood is at first in a fluid state, but an alteration frequently occurs, the blood coagulates, and the vessels become obstructed. The formation of these coagula is an effect of inflammation in the coats of the vein, which may cause abscesses.

TREATMENT.—If no inflammation exists give good food and tonics, and pressure to the parts by bandages. If abscesses form, open and blister, but don't use pressure. If a large varix, without inflammation or clot, exists, the vein may be obliterated by inserting two needles, one above and one below the dilatation, with a thread tied around them, the needles being allowed to ulcerate their way through, care being taken not to insert the needles through the vein, but below and above it, to entirely shut off the circulation.

Phlebolites, or vein-stones. Concretions have been found in the dilated veins in the neck and other parts. They are formed by calcareous degeneration of the coagula and are composed of the phosphates of lime and magnesia.

Air rapidly injected into a vein causes sudden death, but if injected slowly it only causes great distress. Death occurs as follows :—The blood mingles with the air and becomes frothy in the right ventricle, is sent through the pulmonary artery, becomes arrested in the pulmonic capillaries on account of the obstacle presented by the air bubbles. The quantity of blood transmitted through the lungs for the systemic circulation grows less and less according to the increase of its arrest in the capillaries. The supply to the head is inadequate to afford due stimulus to the nervous centres and syncope results. If circulation be not restored, this continues, the respiratory movements cease and life becomes extinct ; the heart last failing in its action for want of its necessary stimulus, the blood.

DISEASES OF THE ARTERIES AND LYMPHATICS.

Embolism Arteritis or inflammation of an artery is rarely seen in the horse but sometimes occurs. The iliac arteries and their branches are imbedded in very powerful muscles and during violent contractions of these muscles are liable to injury, causing inflammation ; exudation from the walls of the vessels forming the nucleus of a clot which partially or entirely closes the vessel ; this is called an embolism.

The SYMPTOMS of an embolism in the external iliac are coldness of the extremities with muscular debility, which increases on exercise ; if both arteries be plugged the symptoms resemble those of paraplegia. There is an absence of pulsation in the artery, detectable by examination per rectum. During repose very little, if anything wrong can be detected, but when the horse is compelled to move he soon shows great pain and inability. Clots may form in the heart and be forced into the arteries, or may form in the veins and be sent to the heart, causing sudden death.

TREATMENT.—Very little can be done.

An Aneurism is a pulsating tumor containing blood, and communicating with the interior of an artery. They are divided into true and false. The true is due to disease of

the arterial coats causing the dilatation of them. The false is a wounded artery, when the blood, prevented from escaping externally becomes coagulated in the areolar tissues and form a sort of a cyst; the wound in the artery remains open and the pulsation can be felt over the enlargement. Aneurisms of the anterior mesenteric and the posterior aorta are quite common. Dr. Bruckmuller examined 65 horses and found only six free from aneurism of the anterior mesenteric artery. In the investigation of obscure diseases it will be well to remember the frequency of aneurism.

TREATMENT.—In aneurism of a deep seated artery very little can be done. Iodide of potassium may stimulate absorption. In external aneurism use pressure or ligature on the cardiac side and the aneurism will become absorbed. Aneurism of a large artery may cause sudden death by rupture of the arterial coats, the symptoms being those of any excessive hæmorrhage, viz:—Rapid sinking of the vital powers, palor of the mucous membranes, coldness of the body and extremities. the animal, before dying, usually uttering a shriek of agony.

Degenerative Diseases of the Arterial Coats is met with in three forms in the horse, viz: Calcareous degeneration, the most common. 2nd, Cartilaginous deposits chiefly found in the small arteries removed some distance from the heart. 3rd, Fatty degeneration, found in old and pampered animals. Rupture of an artery may occur from degeneration of its coats, and is sometimes the cause of apoplexy, when occurring in the cerebral artery.

Lymphangitis, or inflammation of the lymphatics, is known by various names, as a shot of grease, weed, shake, or Monday morning disease. It is usually confined to one hind leg, but sometimes both, and rarely one or both fore legs are affected.

SYMPTOMS.—It generally occurs after a day or two's rest, and is ushered in by rigors and uneasiness, and lameness soon shows itself in the affected limb. A hot stage succeeds the rigors, the animal blows, sweats bedew the body, the pulse is hard, full and strong, the visible mucous membranes injected, the bowels constipated, urine scanty and high colored. The local signs are swelling of the inguinal glands

if in the hind limb, and the brachial if in the fore. The swollen glands are very painful when pressed upon, and a swelling extends downwards from them, first as a narrow elevation on the inner side of the thigh or arm, but soon extending in every direction it involves the whole circumference of the limb, from the body to the foot. As the swelling increases the pain and lameness usually subside. Lymphangitis is liable to recur periodically until the limb assumes a chronically enlarged condition, called **ELEPHANTIASIS**, from the exudate becoming organized. Pus is sometimes formed. This may be suspected when the attack is more stubborn to treat than usual, and when the swelling extends along the belly, involving the sheath or mammary gland. When pus forms the abscess must be opened at once. The causes of lymphangitis are irritation to the lymphatic glands by chyle rich in nutritive material, and in some rare cases, to blood in a highly fibrinous condition, owing to metamorphosis of tissue. The first is produced by over feeding and want of work, the latter when the animal has not been feeding well for some time, the blood being in a fibrinous condition.

TREATMENT.—Give a purgative followed by diuretics, fomentations long continued and often, apply a stimulent liniment, exclude draughts. When the inflammation and lameness subside, exercise. Do not exercise during the inflammatory stage. Elephantiasis is incurable.

HERNIÆ OR RUPTURE.

A Hernia is a tumor formed by the displacement of a viscus, or any portion of a viscus, which has escaped from its natural cavity by some aperture, and projects externally.

Abdominal herniæ are divided into reducible, irreducible and strangulated, according to their condition, and into inguinal, scrotal, ventral, umbilical and diaphragmatic according to their situation.

A hernia is reducible when it can be easily returned into the abdomen. It consists of a soft fluctuating swelling unattended by heat, pain or uneasiness. When the animal coughs it becomes tense, large, and communicates a sudden impulse to the hand of the examiner. It may be formed of

intestine only, in which case the swelling is elastic and compressible, and its return to the sac is sudden, and accompanied by a gurgling sound. If the swelling be more solid and feels doughy to the touch, receives an impression from the fingers, and returns more slowly to the sac unattended by a sound, it is formed of omentum only. Sometimes we have both the intestine and omentum, when the symptoms will be a combination of the above.

A hernia is irreducible when it is not strangulated and yet cannot be returned into the abdomen. The causes which prevent reduction are, 1st, the bulk of the protruded parts is out of proportion to the opening through which they have to return; 2nd, adhesion of the parts to the sac.

A strangulated hernia is irreducible, and the compression of the blood-vessels impedes and disturbs the circulation, causing inflammation of the parts.

Umbilical Hernia is a protrusion of a portion of intestine through the naval opening, forming a tumor at that part. It is often congenital. If not congenital it usually takes place shortly after birth and arises from a yielding of the umbilical opening, the closure of which is lax and weak. In some cases this weakness remains until the animal is three or four years old, and rupture may occur at any time from any violent effort. In foals, umbilical hernia is often spontaneously reduced.

TREATMENT.—Apply clams, skewers, ligature, truss, or open and return the viscus and suture. In some cases the application of nitric acid will effect a cure. In applying clams, etc., place the animal on his back, carefully return the viscus and enclose the loose skin tightly in the clam, or whatever you use, be careful to not enclose any intestine or omentum. Allow the clams to slough off.

Ventral Hernia is that form in which the protrusion occurs through an artificial opening caused by laceration of the muscular and tendinous fibres of the abdominal walls, and may be situated at any part. The tumors vary greatly in size. Large ventral hernia is seldom curable, but should the opening be not very large and treatment prompt, the same treatment as for umbilical hernia is adopted. I have found good results from both truss and clams.

Inguinal Hernia is that in which a portion of intestine has passed through the internal inguinal ring and may be lodged in the canal, or have passed through the outer ring to the scrotum. In the former it is invisible. It generally appears suddenly and often becomes strangulated. Not common in this country on account of horses being castrated early and allowing the inguinal canal to contract. It is sometimes seen in geldings and even in mares.

SYMPTOMS.—If strangulated, colicky pains, which are relieved by the animal lying on his back. In this case examine per rectum, explore the internal ring with one hand and manipulate the scrotum with the other. The strangulated intestine can be felt if hernia exist. If the hernia be not reduced the symptoms increase in severity, the pains become continuous. Cold sweats bedew the body, the pulse becomes thready, the eyes injected and the pupils dilated. If strangulation does not exist it is hard to diagnose, unless the hernia is of considerable size. It sometimes is very large, the swelling yields to pressure and regains its former size when pressure is removed.

Congenital Scrotal hernia is the most common form and the least danerous. It is often seen at birth or shortly after, and will usually spontaneously disappear gradually after the colt is six months old, from the normal contraction of the omentum.

TREATMENT.—If in a colt give nature a good chance to effect a cure, but if the hernia continue or if it occurs in a horse or gelding and it is decided to operate, the animal must be starved for a few hours, then thrown and placed on his back, when, if the hernia is not strangulated, it can be returned. If in a gelding the scrotum must be gathered and a clam put on to prevent the intestine from coming down, and the clam let slough off, by which time an exudate will generally have been thrown out which closes the opening. If a stallion, the intestine must be carefully returned and a clam put on, enclosing the skin, scrotum and cord, (the testicle may or may not be removed) and the clam allowed to slough off. If the hernia is strangulated it may be necessary to enlarge the inguinal rings to allow its return, and of course treatment must be prompt or death will occur from inflam-

mation of the bowels. Great care must be taken to not injure the bowel with the knife, when the hernia is reduced apply clam as above. Scrotal hernia is common in young pigs and they should be castrated by the covered operation. It is sometimes done by returning the intestine and tying a cord around the scotum and cord and allowing it to slough off. The covered operation consists in cutting through the scrotum only and enclosing the peritoneal coverings of the testicle along with the cord, and allowing the clam to slough off.

DISEASES of BLADDER and EXTERNAL ORGANS of URINATION.

Calculi are found in the bladder as well as in the other organs of urination. These vary in chemical composition with the genius of the animal, and with the nature of food and water. The carbonates of lime and magnesia make up the bulk of urinary calculi in horses and ruminants. The first requisite is that some body should exist as a nucleus. This may be mucous, fibrin, or blood, as some foreign body introduced from without. They are sometimes smooth and sometimes rough and gagged.

Cystic Calculi—Stone in the bladder.

SYMPTOMS.—Some stiffness in the hind limbs, a frequent desire to urinate with but little or no result. Urine may pass freely for a time and then suddenly stop, or may pass in driblets or jets, sometimes blood clots are noticed, and microscopic crystals can be detected. Examine per rectum, when the stone can generally be felt.

TREATMENT.—In the mare it can often be removed without cutting, with the spoon bill forceps. In the stallion or gelding, the operation of lithotomy is necessary. Pass a catheter, cut down upon it through the perineum, withdraw the catheter and pass the forceps into the bladder and remove the stones. Generally necessary to cast and chloroform to operate.

In the ox the catheter cannot be passed and we have to cut down on the urethra without its aid. Generally the calculi are in the urethra in these animals and we can detect them and cut down on and remove them.

Urethral Calculi occur in sheep as well as in oxen, and give rise to symptoms of great distress. The animals repeatedly attempt to urinate, pant, grunt, are restless, alternately lie down and rise, and if not relieved die with symptoms of abdominal pain and irritative fever. They should be removed as in the ox.

Preputial Calculi sometimes attain a sufficient size to cause difficulty in urination. They are commonly composed of dirt, mixed with secretions of the follicles of the prepuce and sheath. In order to prevent this inconvenience the sheath should be examined and washed occasionally. In the ox and sheep deposits of phosphates form around the preputial opening, causing an obstruction to the emission of urine, and much inconvenience. They, and the hair or wool to which they are attached, are to be cut off, and if the concretions have accumulated in the sheath they must be carefully removed with the fingers or forceps.

Collection of Sandy Matter in the Bladder, sometimes seen in the horse, the crystals remaining apart instead of becoming agglutinated together. This condition can be detected by the horse passing a whitish matter after urinating.

TREATMENT.—Inject warm water into the bladder, and stir up its contents with the hand inserted into the rectum. In some cases the accumulation is so great that an operation, resembling lithotomy, must be performed, the collection being removed with the spoon bill forceps. Animals subject to this should be allowed small doses of hydrochloric acid in their water every now and then.

DISEASES OF THE EXTERNAL ORGANS OF GENERATION.

Urethritis may arise from a general catarrhal condition of the mucous membrane, or from the administration of irritant medicine, as cantharides or croton oil, or from too frequent copulation, connection with a diseased or lately delivered mare, injury in serving, etc.

SYMPTOMS.—Frequent desire to urinate, the act being performed with difficulty, frequent erections and a discharge

from the urethra, followed by more or less swelling of the genitals. Ulcers sometimes form upon the pupuce.

TREATMENT.—Bathe with warm water, apply mild astringents and inject into the urethra sulphate of zinc, 5 grs. to water 1 fluid oz. If ulcers form touch with a pencil of the nitrate of silver. Give a laxative and bi-carbonate of soda, 3 dr. doses 3 times a day, followed by tonics as sulphate of iron, 1 dr., gentian, 1 dr., 3 times daily.

Phymosis and Paraphymosis. In the first case the penis is imprisoned and cannot be drawn. In the latter it is protruded and swollen and cannot be retracted. The former may be caused by a swelling of the sheath, or enlargement of the penis from any cause. The latter may depend upon the same causes and in old animals it sometimes depends upon a paralysis of the muscles which withdraw the penis.

TREATMENT.—If inflammation be present foment the parts and purge. If the sheath be much swollen, scarify, also scarify the penis if it be much swollen. In paraphymosis it is sometimes necessary to amputate the penis. Cast the animal, cut the protruding portion of the penis off, insert a silver tube into the urethra and leave in until the parts are healed. Treat as an ordinary wound.

Vaginitis sometimes occurs after parturation.

SYMPTOMS.—The mucous membrane of the vagina is highly injected, the lips of the vulva generally swollen, followed by a discharge of a sanious material from the vulva, which excoriates the parts with which it comes in contact, causing considerable straining. It may prove fatal by extending to the uterus.

TREATMENT.—Give opium to prevent straining and arrest inflammation. Inject the vagina with tepid water to which is added carbolic acid. Give enemata per rectum and give hyposulphite of soda in the food. Should the discharge become chronic the disease is called *LEUCORRHOEA* or the whites, and must be treated with local astringents and antiseptics as carbolic lotion, or a solution of corrosive sublimate; and tonics must be given internally.

Garget or Mammitis.—Inflammation of the mammary gland, is caused by injury, exposure, irregular milking or derangement of the health. It is frequently seen shortly after calving.

SYMPTOMS.—The udder is warm, tense and glistening, and more or less swollen, sometimes there is lameness. There is pain, with suspended secretion of milk, the milk is often curdled or bloody. There is fever and general systemic disturbance. It may end in abscess, induration, or gangrene; one or more quarters may be affected. A perfect recovery may occur.

TREATMENT.—Give a purgative, followed by diuretics, poultice, or bathe the udder with warm water. Rub well with camphorated liniment. Draw the milk off often, feed on light diet. If rigors occur give stimulents and clothe warmly. If the teats are very sore draw off the milk with a teat syphon; if abscesses form open them; if induration occurs rub well with tincture of iodine; if gangrene results the affected parts must be removed. In a very painful case of mammitis a solution of the solid extract of belladonna, about half an oz. to a pint of water makes a good application to allay the inflammation and local irritation.

Impervious Teat is caused by concretions from the milk, from fibrous growth, which is often congenital, thickening of the mucous membrane, from closing of the external orifice effected in the healing of a sore, etc.

TREATMENT.—Concretions may be removed by manipulation or a grooved director; when due to a fibrous growth the concealed bistony must be used. A syphon may be kept tied in the teat to keep the channel open.

Sore Teats, Scabs and Warts.—The two former must be treated by bathing and applying carbolized oil or oxide of zinc ointment, and using syphon in milking. Warts must be removed by knife, shears or caustics.

DISEASES OF THE SKIN.

Skin diseases may be caused in different ways, (some are contagious), viz: indigestion, a morbid condition of the blood,

local irritation, the presence of parasites, or the derangement of any of the internal organs may cause irritation of the skin, the result of which is manifested in various ways, some of which we will now consider.

Erythema. Inflammation of the outer layer of the dermis. Its character is that of uniform redness, with heat, swelling and irritation.

CAUSES.—Cold and heat operating alternately on the skin, wet, friction, dirt, pressure, and constitutional causes, as hereditary predisposition, debilitating diseases, plethora and poverty. When the heels are effected it is called **SCRATCHES** or **CRACKED HEELS**; when the greater part of the hind limbs, from the foot to the body, **MUD FEVER**; when the front of the hock, **SALLANDERS**; when back of the knee, **MALLANDERS**.

SYMPTOMS.—Pain, heat, tenderness and redness, followed by sores or cracks, with more or less swelling. It may become unhealthy or foul smelling, and a greasy fluid will be discharged. There will be more or less swelling of the limbs affected.

TREATMENT.—Give a purgative, followed by diuretics and alteratives. Dress the parts with white lotion, carbolized oil, or zinc ointment. The lotion is better in warm weather, oil or ointment in cold weather. If unhealthy and foul smelling, poultice with boiled turnips or linseed meal, to which may be added some powdered charcoal. It is sometimes necessary to apply a caustic, as butter of antimony, once or twice, if the parts are slow to heal. Do not wash.

Surfeit or Nettle Rash consists of an eruption of elastic vesicles, attended with itching. The lumps rise very quickly and upon the greater part of the body, sometimes disappear as quickly as they come. It is caused by some derangement of the digestive apparatus. A sudden change of diet, over-heating, or drinking largely of cold water when hot may cause it.

TREATMENT.—A purgative is generally all that is needed. Should there be great itchiness bathe with warm water and apply white lotion.

Eczema. Most skin diseases of horses may be said to be some form of eczema.

Eczema Simplex is a non-contagious disease. It usually comes on suddenly and is manifested by itchiness, the hair and cuticle become rubbed off, leaving the skin red, raw and inflamed. Successive crops of vesicles develop themselves, dry on the sore skin, or discharge a fluid, which seems to cause an extension of the disorder. It is generally called mange, but it differs from true mange in being non-contagious and in not being due to a parasite. The head, neck and shoulders are the favorite seat, but it may attack any part.

TREATMENT.—Give a purgative, followed by diuretics and alteratives. Wash the parts thoroughly with strong soap suds and apply carbolic or white lotion.

Eczema Pustulosum or Grease is an inflammation of the skin at the back of the heels and the fetlocks, extending upwards. Vesicles and pustules form, yielding a foetid discharge, accompanied by considerable swelling, the skin at the heels becomes rigid. The skin cracks, becomes a mass of soreness, ulceration and fungus. The hind limbs are chiefly affected and the disease is apt to become chronic. The fungoid growths become more pronounced and are called grapes.

TREATMENT.—Purge, give alteratives, poultice. Apply zinc ointment, carbolic acid or white lotion. If grapes abound, use the knife or actual cautery, followed by caustics.

Sitfasts are caused by the pressure of the harness, collar, saddle, etc., and consists of patches of skin, all of which has lost its vitality except a small portion in the centre which adheres firmly to the subcutaneous tissue and is surrounded by a suppurating wound.

Parasitic Diseases of the Skin may be considered under two heads. 1st, those due to animal parasites; 2nd, those due to vegetable parasites. Of the first variety is **SCABIES, MANGE, SCAB OR ITCH**, a contagious disease due to the presence of animal parasites which are different varieties of acari. It attacks all the domestic animals but is seldom seen in this country.

SYMPTOMS.—Intense itching, aggravated by hot weather or buildings, and by perspiration. In sheep the wool drops off. The skin is thickened and rendered rigid by exudation into its substance, as well as by the accumulation of crusts on its surface, but the reliable sign is the presence of the parasite, which can sometimes be detected by the naked eye when a little of the scruff is placed on a piece of glass and closely watched, a low magnifying power is a great help.

TREATMENT.—First soften the scab well with oil, then wash with soap suds and apply the following ointment, 2 parts sulphur, 1 each of the oil of tar and potassium carbonate and ten parts of lard. Give good food, tonics and alterations. Isolate the animals, wash clothing, harness, etc., and whitewash the stalls, etc.

Lice are parasites destitute of wings, which invest the skin of the lower animals.

TREATMENT.—Clip the animal, if practicable, and apply a decoction of stavesacre seeds, 1 oz. to a pint of water.

Poultry Louisiness causes animals great distress, the insects can usually be seen with the naked eye.

TREATMENT.—Same as above, of course, removing the cause.

Warbles are found in little rounded tumors on the backs of cattle in winter and spring, each tumor having a hole in the centre, through which the grub may be seen or extracted. The gad fly deposits its eggs on the skin and they become developed into the larvæ of the fly. The act of depositing the egg seems to cause pain, as it causes the animal to become furious and gad and stray from the pasture, hence the name. The grub can be pressed out with the fingers.

Maggots may quickly appear in any sore in warm weather, unless great care be taken. They are hatched from the ova of the large blow fly. Maggots are frequently met with on sheep, the ova is deposited in the wool, especially about the rump or root of the tail, if any ways dirty; they burrow beneath the skin and cause suppuration.

TREATMENT.—Cleanse the sores and dress with carbolic lotion, or the following, 3 parts oil of tar and 1 part oil of turpentine.

Common Ringworm is common in horses, cattle, dogs and cats, as well as in man, is readily transmitted from one to the other. It occurs as round, bald spots on the face or elsewhere, covered with white scales and surrounded by a ring of bristly, broken hairs, with scabs around the roots. Soon this ring is shed and a wider ring is formed. If examined by a microscope a vegetable parasite may be found on the hairs and hair follicles.

TREATMENT.—Pull out the hairs with a forcep and paint the parts with tincture of Iodine, or apply helebore ointment, strong carbolic lotion, etc.

Honey-Comb Ringworm is common in cattle, dogs and cats, as well as in children. It shows the same general appearance of baldness, advancing from the centre, as the above, but a cup shaped yellowish scab results, which has obtained for it the name. It is caused by another form of vegetable parasite. Treat the same as for common ringworm. Cleanse all clothing, harness, etc., that has come in contact with the animal.

Castration.—The operation by which the horse is unsexed is generally performed upon him when he is about one year old, and at a season of the year when the weather is moderate. The month of May or the first half of June is the favorite period. Some colts are not castrated until they are two or three years old, while others are operated upon at a few weeks old. I consider the latter the better time to operate. Other animals, as lambs, calves and young pigs are generally castrated when quite young.

Precautions to be observed before Operating.

1st. Examine the scrotum carefully in order to ascertain if hernia be present, and whether the testicles have descended, for in some instances, either from narrowness of the inguinal canal, or some other cause, the testicles, or one of them, may be retained in the abdominal cavity. If the testicle be retained in the neighborhood of the kidney, above the peritoneum, the animal is said to be a true ridgling. If

the testicle has descended to the bottom of the abdominal cavity, but has not passed through the inguinal canal, or may have passed through the internal ring and be confined in the canal, the animal is said to be a false ridgling, or a flanker.

2nd. Do not operate upon a thin, weakly animal, nor upon one suffering from any disease, especially from strangles influenza or any respiratory trouble.

3rd. Do not operate during very cold weather, when an easterly wind is blowing, nor in sultry weather when flies prevail.

4th. Do not operate upon an animal of any age. which is confined to an ill-ventilated, ill-drained, or otherwise unhealthy shed or stable, nor upon one stabled with a great number of horses.

5th. Be very careful that all instruments required for the operation, and also the hands of the operator, be scrupulously clean, and the knives sharp.

6th. If the operator has conducted a post-mortem examination of any animal, or has attended a case of parturition, or has performed any operation calculated to produce a taint that may cling to his clothes, hands or instruments, he must thoroughly disinfect his clothes, etc., and postpone the operation of castration for at least one day.

If the animal be in good condition it is good practice to restrict the supply of bulky food, and stint him in the supply of water for a few hours before operating. If he be not in good condition the operation should be postponed for a few weeks, and the animal well fed in the meantime. If he be in too gross a condition it is well to purge him once or twice and reduce his food in order to prepare him for the operation.

Having decided to operate. the animal is cast and firmly secured and held on his back, unless the operation is to be performed with the horse standing. Many different methods of casting and securing are used. I usually use the side line, cast on the left side, secure the hind feet and leave the fore feet free. The animal being ready, the operator will grasp a testicle in the left hand, (if they are of uneven sizes, take the smaller one first, if of equal sizes take the one farthest from

you) presses it tightly against the scrotum and make a bold, free incision, cutting through the scrotal and peritoneal coverings, when the testical will pop out. It is then removed by whatever method is being adopted and the other testicle then taken in the same way. The following are some of the methods employed, viz., clams, torsion, actual cautery, ligature, ecrasure and emasculator. If the clams are used, after the testicle is exposed the operator will carefully cut off the nonvascular portion of the cord, then enclose the vascular portion in a clam and cut the testicle off, using a clam for each cord, the clam to be removed in about 36 hours. I prefer either the ecrasure or the emasculator, in which case it is immaterial whether the nonvascular portion be cut with the knife or with the other instrument. After castration the animal is not to be exposed to wet or cold, he should have exercise, either by running at grass or being exercised in other ways, he should be kept in the stable at night for a week or ten days. If the colt should be castrated at a few weeks old I do not consider it necessary to take such precautions against bleeding, all that is necessary is to divide the cord by a sort of scraping motion of a knife. The same plan answers for calves of a few weeks old. For the young of smaller animals, as the sheep and pig, I usually, after exposing the testicle and cutting the nonvascular portion of the cord off, pull the testicle steadily away without cutting the cord at all.

As a rule, when the operation has been carefully performed, no further treatment is required except the attention already mentioned, but in other cases, even after the most careful and skillful operation, untoward results will follow. The normal results of the operation are, a varying, but comparatively slight amount of swelling, more or less stiffness, and a discharge of serum and pus from the wounds for a few days. Some of the untoward results are,—hæmorrhage, excessive swelling, formation of abscesses, scirrhus cord, tetanus, peritonitis, fistula, etc.

In cases of excessive hæmorrhage the vessel must be ligatured if possible ; if this cannot be done the scrotum may be stuffed with batton saturated with the tincture of iron or other styptic. In excessive swelling, scarify the swoolen parts and bathe with warm water, and exercise. If abscesses

form they must be opened. If scirrhus cord forms it must be removed with the knife and ecrasure, etc. Tetanus and peritonitis must be treated as the same diseases resulting from other causes.

Fistula and scirrhus cord result from the same cause, viz., the cord becoming adhered to the scrotum and a tumor growing. It usually results after castration with clams, when the clams are removed the adhesions should be broken down with the finger to prevent the growth of scirrhus.

DISEASES OF THE DIGESTIVE ORGANS

With rare exception diseases of the digestive organs are the results of errors in feeding. I may here state that horses are best kept in health and working condition by feeding upon an admixture of food requiring thorough mastication, and horned cattle also by food requiring remastication, in addition to more nutritive material. The intestines of the horse are more subject to disease than the stomach, while the reverse is the case with the ox and sheep. The reason for this is that the stomach of a horse is a simple organ, and small in comparison to the volume of the intestines. The food is arrested for only a short time in it, soon passing on to the intestines where the chief part of the process of digestion takes place. In the ox and sheep the large and complicated stomach not only digests but also prepares the food for digestion, while the intestines have a much less volume than in the horse.

Chronic Indigestion, or indigestion without engorgement, occurs in the horse. The symptoms being a capricious appetite and a tendency to eat filth, with sourness of the mouth and increased thirst, the animal becomes hide bound, has a dry, scurfy skin, irregularity of the bowels and general unthriftiness. If caused by imperfectly masticated food it can be told by the fæces. Colicky pains are sometimes present an hour or two after feeding, whilst in others, giddiness, megrims, and even paralysis may occur.

CAUSES.—Improper food, the process of dentition, diseases of the teeth, voracious feeding, irregular feeding, debility of the stomach, etc.

TREATMENT.—Remove the cause if possible. If diarrhoea be not present, causing weakness, give a moderate purgative. After this has operated give bicarbonate of soda, gentian, sulphate of iron, and nux vomica, dr. doses of each twice a day, and feed carefully. If this treatment fails give muratic acid, 1 to 2 drs. twice a day.

In the cow chronic indigestion is shown by recurring tympanitis and other symptoms similar to those of the horse, and when not due to any external cause is often found to be due to the presence of some foreign body in the rumen or reticulum, removable by the operation of rumenotomy.

Acute Indigestion, or indigestion with engorgement, may arise from repletion with solid food, or from the evolution of gases arising from the fermentation of food.

CAUSES.—Too much food, or food greedily swallowed and imperfectly masticated, feeding immediately after severe exercise or severe exercises too soon after feeding, wheat, peas, or a too sudden change of food, drinking large quantities of water shortly after feeding, etc.

SYMPTOMS.—Uneasiness, stamping of the feet, lying down, getting up, etc., soon followed by fullness and tension of the belly, bloating, quick oppressed breathing, pulse at first quick and strong, becoming weaker as the disease advances, dullness and stupor, sweats bedew the body. The pain is usually continuous but of varying intensity, no disposition to eat or drink. In rare case there is belching or even vomiting, the food escaping through the nose. More commonly vomiting implies rupture of the stomach, but it may occur without rupture. The symptoms of rupture are great prostration, with tremors of the muscles, heavy breathing, staggering, the pulse becomes weak and soon imperceptible, and the countenance haggard and dejected.

TREATMENT.—Give alkalines, as oil of turpentine, 2 to 4 fluid oz., and raw linseed oil, 1 pint. Good practice to foment the abdomen. Place in a comfortable box stall. Give injections per rectum. If the pain be severe give anodynes, as belladonna or chloral hydrate, 2 drs. of the solid extract of the former, or 2 fluid oz. of the fluid extract, or

chloral hydrate give 1 to 2 oz. Hypodermic injections of 1 to 1½ grs. of eserine, and 2 to 3 grs. pylocarpine has an excellent action in causing expulsion of the gases and stimulating peristaltic action. If the dose given at first does not have the desired action, repeat in 1½ to 2 hours, and repeat again if necessary. If the bloating be excessive puncture on the right side, between the point of the hip and the last rib and allow the gas to escape. It is good practice to give a purgative after the acute symptoms are allayed. After administering a purgative for any disease do not allow anything to eat except a small quantity of soft food, as bran, and water in small quantities given often, until the purgative begins to act, and do not let the animal be worked until his bowels regain their normal condition. A purgative should act in the horse in from 18 to 24 hours, in the ox a little sooner, but often they do not act as quickly as we expect, and I do not consider it safe to repeat the dose sooner than at least 48 hours, when a smaller dose may be given.

Hoven, Tympanitis or Blown in cattle, so called from the drum like condition of the rumen. It is a distended state of the rumen, due to the elimination of gases from fermenting food.

CAUSES.—Over doses of food, sudden changes of food, especially to that of a fermentable character, as frozen grass, turnip tops, fresh clover, etc., and to gorging the stomach, causing suspension of the peristaltic action. Diseases of the salivary glands, etc.

SYMPTOMS.—Swelling of the left side of a springy, tympanic character, uneasiness, stamping of the feet, loss of appetite and rumination, secretion of milk suspended, difficult breathing, expansion of the nostrils, moaning and belching, etc. Unless relieved the animal may die from suffocation, rupture of the stomach or the diaphragm, or from the absorption of the gases into the circulation.

TREATMENT.—If the bloating is not excessive give 2 to 4 fluid oz. oil of turpentine and a pint of oil. If necessary repeat in an hour. If the bloating is excessive and immediate relief is necessary, puncture with a trochar and cannula on the left side, between the point of the hip and the

last rib. It will do to use a knife if the proper instrument cannot be had. It is a good practice to give a brisk purgative, as 1 to 3 lbs. Epsom salt after an attack of tympanitis.

Impaction of the Rumen is that condition in which the rumen becomee filled with large quantities of food, which does not digest properly, nor yet form gases in large quantities as in the last mentioned disease. It is also caused by engorgement on mostly any food, changes of food, etc. The rumen becomes distended with the food and its walls become more or less paralyzed and digestion suspended.

SYMPTOMS.—Much the same as tympanitis, but there is not such violent distension of the rumen and the breathing is not so much affected. The rumen has a doughy feel, instead of the springy feel as in tympanitis.

TREATMENT.—Give a brisk purgative as 1 to 3 lbs. Epsom salts, followed by 2 dr. doses nux vomica three times a day. Repeat the physic if necessary. in 48 hours. A little boiled flax seed can be given in the meantime, it helps to sustain the animal's strength, and aids the action of the purgative, and also makes a convenient vehicle in which to administer the powders. In some cases where the distension is great and the stomachic walls so paralyzed that medicine will not act, RUMENOTOMY may be performed. It consists in placing the ox with the right side against a wall and securing him there, make an incision in the space between the point of the hip and the last rib, from above downwards and slightly forwards, right through the skin, muscles and walls of the rumen, placing a towel carefully into the rumen to prevent the contents from falling between it and the abdominal walls, removing the greater part of its contents with the hand, then removing the towel and suturing the walls with carbolized cat gut. The abdominal muscles must then be sutured with the same, and the skin with ordinary suture. After the operation the animal must be fed light, sloopy, easily digested food, for about 10 days.

Grain Sick is simply impaction of the rumen with grain. When an animal is known to have had an opportunity to eat large quantities of grain, do not wait for him to show symtoms of sickness before treatment, but give him a

brisk purgative at once, restrict his food and give water in small quantities. The treatment for grain sick is the same as the last mentioned. If he appears so have eaten a very large quantity, it is well to perform rumenotomy at once, as the moisture of the stomach will cause the grain to swell, and distend the rumen to such an extent as to cause a complete cessation of digestion.

Impaction of the Omasum or third Stomach.

—Fardel bound—Maw bound—consists of impaction of food between the leaves of the manyplies, and is often followed by inflammation of the stomach. It is caused by the introduction into the stomach of indigestible food, particularly food of a dry, woody nature, old last year's grass, that is often taken along with the fresh grass in the spring is very productive of fardel bound. It is difficult to treat and often proves fatal.

SYMPTOMS.—It often begins with diarrhoea, which is followed by obstinate constipation, appetite impaired, rumination ceases, secretion of milk more or less suspended, muzzle dry and eyes generally dull, but sometimes wild looking, a short grunt is generally emitted during expiration, the breathing is quickened; pressure under the false ribs on the right side will generally cause pain; after a time there is sometimes more or less tympanitis formed by the food in the rumen; the animal often lies on its left side with its head turned towards the right flank; sometimes delirium more or less marked is noticed, and sometimes drowsiness and stupor or partial paralysis.

TREATMENT.—Give a brisk carthartic, as 1 to 3 lbs. Epsom Salt. It is good practice to give about an oz. of pulverized aloes in solution, as aloes appear to have a special action on the third stomach. (I may here state that it is good practice to give about half an oz. of ginger in combination with a physic, no matter what the disease is, as it prevents griping when the physic is acting.) Give nux vomica 3 times daily and give stimulents, as sweet spirits of nitre, or liquor, and encourage the animal to drink. If the cathartic does not act, repeat in about 36 hours and so on until the bowels act freely. In this disease we find that after giving a physic we often get a passage of a small quantity of liquid faeces, and then the constipation is again well marked.

Paraplegia is a partial or total paralysis of the hind quarters, which sometimes occurs from diseases of the stomach.

SYMPTOMS.—Partial or complete inability to rise, with staggering gait if on the feet.

TREATMENT.—Give brisk cathartic and follow by *nux vomica*.

Indigestion in Calves, Lambs and Foals.—**WHITE SCOURS** may result from a variety of causes, such as feeding newly born calves on old calved cows' milk or on skim milk, feeding foals on cow's milk, ill health or improper treatment of dam, allowing foals to suckle when the dams are heated, long intervals between suckling and then taking large quantities, foreign bodies, as hair balls, etc., in the stomach, uncomfortable quarters, etc.

SYMPTOMS.—Irregular appetite, swollen, tender, drawn up abdomen, with a foetid, watery discharge from the rectum, dry, scruffy skin and rapid emaciation.

TREATMENT.—Remove the cause. If not too weak give 1 to 4 oz. castor oil. If very weak give laudnum, 1 to 3 fluid drs., brandy, 2 to 6 fluid drs., and catechu, 1 to 2 drs., according to the size of the patient, in a little of the mother's milk every two or three hours, until the scouring ceases. See that the patient gets good milk. Give linseed tea, to which add 1 to 2 fluid oz. of lime water, two or three times daily. In many cases, where the symptoms are not serious, the administration of lime water in linseed tea, or the milk, is all that is necessary to do.

Constipation of the Bowels may be looked upon more as a symptom than as a disease of itself. As long as the animal remains in good health no active measure need be taken, beyond prescribing a more laxative diet. It may be due to debility of the digestive and secretery glands of the bowels. In such cases give iron and *nux vomica*. Paralysis of the bowels sometimes results, there will be no passage of fæces and no natural abdominal murmurs, and in some cases a non-contractile condition of the rectum. The appetite will be much impaired and the animal dull, but in the early stages no severe symptoms will be shown.

TREATMENT.—We must be careful about giving purgatives, as they might cause rupture or irritation of the bowels, on account of the paralyzed condition of the bowels. Endeavor to overcome this by the administration of nux vomica and stimulants, and injections per rectum, then give a laxative, as linseed oil, 1 to 2 pints, followed by easily digested food and good care.

Spasmodic Colic consists of a spasmodic contraction of parts of the muscular coats of the small intestines, and sometimes the large. In many cases the neck of the bladder is also spasmodically contracted, when the animal will attempt to urinate if there be much urine in the bladder, but cannot succeed until the contraction is relieved.

CAUSES.—Improper food, changes in food or water, water when the animal is heated, exhaustion from over work, particularly if associated with long fasting. Colicky pains are also symptomatic of other diseases which will be considered.

SYMPTOMS.—Sudden, and usually violent pains, pawing, kicking at the belly, looking around towards the flanks, lying down, rolling, struggling violently or lying outstretched, then suddenly rising, shaking himself and remaining free from pain for a time. The pains may or may not again appear, if so, the same symptoms are shown as at first. The pulse is very little affected except during the spasms, when it becomes excited. Sometimes there are frequent attempts made to urinate, which act cannot be accomplished if the neck of the bladder is suffering from spasm. This symptom gives rise to the idea that there is something seriously wrong with the urinary apparatus; as soon as the spasm is relieved the horse will urinate. Small quantities of feces are frequently passed during the spasms. These symptoms continue until the animal gets relief. Spasmodic colic has been known to cause death from exhaustion, and in some cases it is the forerunner of enteritis or other serious disease.

TREATMENT.—In most cases a spontaneous cure takes place without treatment in the course of half an hour or so, but it is advisable to treat by the administration of anti-spasmodics. The following is a favorite colic drench — 1½ fluid oz. each of laudanum and sweet spirits of nitre and 1

fluid oz. of the fluid extract of belladonna and half a pint of water, the dose to be repeated if necessary in an hour, or instead of the above give any good antispasmodic, as chloral hydrate, chloroform, ether, etc. The hypodermic injection of about 3 to 5 grs. of morphia, or $\frac{1}{4}$ gr. of atropia answers well. It is well to give injections per rectum. It is good practice to administer a purgative after an attack of spasmodic colic. Some horses are very subject to colic, indigestion, etc. I find that feeding a tablespoon of ginger every night in their food will usually remove the tendency to the attacks by acting as a stomachic, and giving tone to the digestive glands of the stomach and intestines.

Flatulent Colic is much more serious than spasmodic. It consists of distension of the intestines with gas. The causes are much the same as those of spasmodic colic, especially should the food readily ferment. This, and I may say, mostly all intestinal diseases frequently appear without any recognisable cause, due, no doubt, to a nonactive condition of the digestive glands.

SYMPTOMS.—The pain is not so suddenly shown and not so acute as in spasmodic colic, the abdomen becomes more or less distended with gas, better shown on the right side. The pulse, at first full and strong, becomes frequent and feeble, the breathing difficult, extremities cold, and there is generally twitching of the muscles. He generally lies down more carefully than in spasmodic. If relief be not afforded, death soon results from rupture of the intestine, asphyxia, or blood poisoning from the absorption of gases. It sometimes occurs during the progress of other diseases, indicating a very grave condition.

TREATMENT.—Give turpentine and oil to neutralize the gases; or the hypodermic injection of eserine. Give belladonna, chloral hydrate, chloroform, or the hypodermic injection of morphia or atropia to retrieve pain. Give injections per rectum. If the bloating be excessive and immediate relief is necessary puncture on the right side.

Impaction of the Colon results from overfeeding, especially with innutritious food; the food not being properly digested lodges in the colon. It may be due to weakness of the digestive organs, or inactivity of their glands, want of exercise, sudden changes of food, etc.

SYMPTOMS.—The condition may be present for some time without any serious symptoms being shown, then the animal suffers more or less from colicky pains; he frequently sits on his haunches, or while standing will press his rump against any solid object. He resists the introduction of the hand, or injections into the rectum, by violent straining. There will be little or no passage of *fæces*, and generally a fullness of the right side of the abdomen can be noticed. After a time gases are liable to form, when the fullness will be more prominent. There is generally a paralysis of the coats of the intestines. In the first stages the pulse is slightly accelerated, becoming more so as the disease advances.

TREATMENT.—Give a purgative, followed by *nux vomica*. Remove the *fæces* from the rectum by hand and give injections per rectum repeatedly. Some recommend the injection of a solution of aloes into the rectum. Combat pain by belladonna, chloral hydrate, or the hypodermic injections of morphia or atropia. Do not give opium as it would increase the constipation. If gases form treat accordingly.

Rupture of the Rectum sometimes occurs from disease of the blood vessels or the walls of the viscus, or from violence, as the foot of a foetus being pushed through during parturition, etc., etc. If it occurs near the anus it may be stitched, and by feeding the animal on light, easily digested food, a cure may be effected. If the rupture should be far in it is hard to effect a cure.

Inversion of the Rectum is caused by violent straining during parturition, or impaction of the intestine, constipation, diarrhoea or dysentery.

SYMPTOMS.—There will be a greater or less protrusion of the intestine through the anus.

TREATMENT.—Remove all sources of irritation, wash thoroughly with warm water, if much inflamed and swollen scarify and allow an escape of serum, oil the parts and return carefully to the natural position, and retain by a truss or by a suture across the anus. Restrict the diet and remove the *fæces* by hand, if necessary; relieve local irritation by opium. In cases where the bowel cannot be returned, dissect off the mucous membrane and then return. In some cases the anus

contracts violently upon the gut, and, shutting off the blood supply, causes gangrene. In such cases remove the gangrenous parts with the knife, and suture carefully with cat gut or carbolized silk.

Hæmorrhoids or Piles.—More frequently seen in dogs. They consist of dilatation of the hæmorrhoidal veins, causing small tumors. These sometimes protrude outside of the anus and bleed profusely.

The SYMPTOMS are the switching of the tail, and the tendency to rub it against the wall, panting during the act of defecation, the *fæces* being tingled with blood. The dog sits on its haunches and pulls himself along the ground.

TREATMENT.—Give a laxative and restricted diet. Give enemas and apply astringents to the parts as 1 part oak galls to 4 parts of hogs lard. It is sometimes necessary to remove the piles with the *ecraseur*.

Enteritis, —Inflammation of the Bowels,—is one of the most fatal diseases to which horse flesh is liable. The seat of the inflammation is usually the mucous coat, but all may become involved as the disease progresses. In some cases it may terminate favorably in the horse, but in the majority of cases gangrene results, or the animal may die from hæmorrhage into the intestinal canal, or from exhaustion and pain. Gangrene may result in 8 or 10 hours, the animal rapidly succumbing or it may live for some days.

POST MORTEM APPEARANCES.—There are patches of darkened tissue approaching blackness, which may be only a few inches long, or may extend for a foot or more, and be associated with extravasation of blood into the canal. The mucous membrane can be easily stripped off.

SYMPTOMS.—There may be general depression, rigors, anxious expression, quickened breathing and rapid evacuation of small quantities of *fæces* before abdominal pain is shown. The mucous membranes are deeply congested, the mouth dry and hot, appetite gone, the pulse hard, frequent and wiry. The belly tender upon pressure. He stamps with his feet, strikes at his belly, lies down carefully, may attempt to lie down several times; looks towards his flanks, pants, blows, and

sweats with pain. The pain is constant, distressing and agonizing. Sometimes he will stand persistently and paw for hours, pulse hard and frequent, from 80 to 100 or more, as the disease advances it becomes thready and imperceptible. He sighs or groans with pain, sweat runs off the body. The skin is never dry, at one time hot and then cold. The countenance becomes haggard, the eye expressive of delirium and the pupils dilated. He may now throw himself about in the most dangerous manner or walk incessantly around the stall, then stand and balance himself for a greater or less time, his legs give way and he falls in any direction, and expires. When gangrene sets in the pain will cease and he will stand quiet, drink water and even attempt to eat, the breathing becomes quieter, but the haggard expression remains and the pulse is imperceptible, cold sweats bedew the body, and the abdomen swells, legs and ears cold, breath cold and sometimes foetid. Death soon ends the scene, the bowels remaining inactive to the last.

TREATMENT.—Opium is the great sheet anchor. The advisability of bleeding depends on the pulse, when it is full and strong it is good practice to bleed. In some cases the symptoms abate in a few hours and a recovery results. In treating a case of enteritis, give large doses of opium. The pulverized gum opium is preferable to the tincture, as it has not the stimulating effect, and the idea is to keep the bowels as quiet as possible. Give 2 to 4 drs. every two hours in bolus or solution. Fomentations constantly applied to the abdomen is serviceable.

Volvulus and Intussusception.—Under these names various entanglements of the bowels have been described, giving rise to abdominal pain, enteritis and death. Volvulus is a rolling on itself of a piece of intestine until nothing can pass through, a knot as it were. Intussusception is the slipping of a portion of bowel into the portion immediately behind it, like the drawing of a finger of a glove into itself. Cases of recovering from the latter are recorded, in which the portion of the bowel has sloughed off, and passed off per rectum, the remaining portion healing.

SYMPTOMS are the same as obstinate constipation. No treatment can be recommended.

Intestinal Concretions.—Their most usual seat is the large intestine, where they sometimes attain a large size, and as much as 25 lbs. or more in weight. They have been found in the stomach, 4 or 5 lbs. in weight. Some are composed of phosphates (phosphatic calculi); these are hard, smooth and polished, having a nucleus, generally a piece of iron or stone; others, composed of beads of grain, hair, or other indigestible matters, often mixed with phosphatic salts assuming the same shape as the first.

SYMPTOMS.—Colicky pains and obstruction of the bowels. Their presence can only be suspected by recurrent attacks of colic, etc. They can sometimes be felt and removed by the hand per rectum, which shows the advisability of making a rectal examination in all cases of abdominal pain.

Diarrhœa is the term applied to the frequent passage of liquid *fæces* without co-existent inflammation. It may be a spontaneous effort to discharge from the intestines something that is obnoxious to them, and to the system generally. It is induced in all animals by a variety of causes, such as indigestible food, sudden changes of diet, particularly from a dry to a moist one, medicinal substances, parasites, derangement of the liver, copious draughts of water when the animal is heated, foreign matter in the intestines, etc. Some animals are very prone to diarrhœa from trivial causes, as those of nervous temperament; flat-sided, narrow-loined, loosely-coupled horses purge on going a journey and are hard to keep in condition. Horses of this kind are said to be washy.

TREATMENT.—When the trouble is due to some offending matter in the intestines, its expulsion must be aided by a moderate dose of castor, or linseed oil, and the diet must be changed. If the bowels do not acquire their normal condition after the laxative has acted, astringents, as catechu, opium and chalk, must be carefully given, as 1 oz. tinct. of opium, 4 drs. each chalk and catechu in a pint of water every 4 hours until the diarrhœa ceases. Thirst is usually excessive, and a little flour or starch can be given frequently in small quantities of water. If the animal be much depressed, nitrous ether or brandy may be given every two or three hours. Feed dry hay and oats; keep quiet and comfortable.

Dysentery.—While acute diarrhœa most commonly attacks the horse, chronic diarrhœa and dysentery are much more common in cattle and dogs. It consists in an inflammation, having a tendency to terminate in ulceration of the mucous membrane and glandular structures of the intestines. It appears in both an acute and chronic form, the chronic in horned cattle being often dependent upon a scrofulous diathesis with tubercular deposits and ulceration of the intestinal glands. Acute dysentery is not often seen, except as a concomitant to other diseases, but may be induced by bad food and putrid water. The symptoms of acute dysentery are shivering fits, variable temperature of the body, arching of the back, clammy mouth; the animal grunts, yawns and grinds his teeth, and at short intervals discharges per rectum a quantity of thin material mixed with pellets of hardened fæces and blood. There is much straining, and irritation of the anus and rectum, which appear red and sore. Abdominal pain is shown by the whisking of the tail and pawing. Tympanitis is sometimes present, great dullness, thirst and rapid emaciation. In the chronic form there is emaciation, looseness of the teeth, and dropsical swellings, the fæces are tinged with blood and contain much mucous, and after a time an admixture of fœtid, purulent matter. The fæces are discharged involuntarily, the eyes become dim and sunken into the sockets, and the animal dies.

TREATMENT.—In both forms give mild oleaginous purgatives, succeeded by opium, and antacids as the bicarbonates of soda and ammonia. Should these not succeed treat as for diarrhœa. To overcome the fœtor of the fæces give the hyposulphite of soda in 3 to 4 dr. doses three times daily. In the chronic form cod liver oil is serviceable. The diet must be nutritious.

Azoturia is a hypernitrogenous condition of the blood throughout the system, peculiar to the horse.

CAUSES.—Excess of nitrogenous food, with want of exercise.

SYMPTOMS.—After a varying period of idleness, during which time the animal has been tolerably well fed, he is taken out to drive or work, he, as a rule, feeling more lively than usual. After having travelled some distance from a few rods to a few miles, he suddenly becomes dull, may go very lame

in one or both hind legs, as though he had picked a nail, sweats profusely, staggers and sometimes exhibits colicky pains, sometimes there is complete loss of power to move, he falls and is unable to rise. Usually there is a very tense and hard swelling of the muscles over the loins. If the urine be drawn it is found to be coffee colored or almost black. If the horse be down he is generally uneasy for a time, throwing himself about violently. If on his feet he will try very hard to remain standing. In some cases he is able to retain a standing position, when the case is not so severe. The brain and spinal cord are generally more or less affected, causing more or less delirium and paralysis.

TREATMENT is often successful. If standing give a purgative, and bleed. Endeavor to keep standing if possible. Apply mustard over the loins and clothe warmly. If much uneasiness is shown give anodynes, as belladonna or chloral hydrate; give injections per rectum. About the second day give nitrate of potash in 3 dr. doses in water. If the horse be down make comfortable and prevent him from injuring himself. Give a purgative, draw off the urine and turn from side to side every seven or eight hours. Give potassium nitrate about the second day; in three or four days endeavor to get him on his feet and use slings if necessary, and give *nux vomica* in 2 dr. doses, three times daily, to overcome the paralysis.

DISEASES OF THE RESPIRATORY ORGANS.

Catarrh or Common Cold.—Symptoms, sneezing, discharge of a watery material from the nostrils, redness and dryness of the mucous membrane of the nose, the discharge becomes thick, whitish and profuse, fever, dullness and debility, impaired appetite.

CAUSES.—Exposure, ill-ventilation, sudden changes of temperature. Animals are very liable during the time of changing the coat, and young animals when brought into warm stables often suffer from it. It is sometimes complicated with laryngitis, and if neglected it often spreads over the whole respiratory tract.

TREATMENT.—Place in a comfortable, well-ventilated box-stall, clothe according to the weather, allow plenty fresh air, but exclude draughts, feed on laxative diet, steam the nostrils by holding the head over a bucket of hot water and stir with a wisp of straw, give nitrate or chlorate of potash in 2 dr. doses, 3 times daily, to subdue fever, follow by tonics and good food, don't purge, give injections per rectum if the bowels be costive.

Acute Laryngitis is an inflammation of the lining membrane of the larynx. It is not an uncommon nor yet a nonimportant disease, as it sometimes kills very quickly. There is a great tendency to submucous effusion, and this, together with the formation of mucous on the free surface of the mucous membrane is apt to cause closure of the glottal opening, and death from asphyxia.

SYMPTOMS.—At first a dry cough, difficulty in swallowing, the water returning through the nostrils. It is often accompanied with pharyngitis. There is generally a discharge from the nostrils even in the first stages, at first watery but soon becoming thicker and whitish. Sometimes the nose is protruded; there is difficulty in breathing, shown by a harsh sound being emitted. There is generally more or less swelling of the neighboring glands, and soreness on pressure of the parts, which causes the animal to cough. In severe cases the breathing can be heard for a considerable distance. The eyes become prominent, frequently we have swelling of the legs and apparent soreness of the joints. The mucous membrane of the eye is injected and often there is a flow of tears. In the later stages, the cough becomes hoarse and gurgling. The temperature is increased, and the appetite impaired. The animal will generally stand persistently, and if possible with his nostrils where fresh air is plentiful. I may here state, that in mostly all respiratory diseases the patient stands mostly all the time.

TREATMENT.—In mild cases good care will generally suffice, as mostly all these fevers must run their course, and we endeavor to assist nature. Apply ammoniacal liniment to the throat, steam the nostrils, apply a hot poultice to the throat, or apply dry heat; give chlorate of potash in 2 dr. doses three times daily; give soft food; give milk and eggs to

drink if he can't eat. Hold the pail up high, feed out of a high manger, make comfortable. Must not force medicine down; follow by tonics and stimulants. If necessary perform tracheotomy. SEQUELS—thickening or ulceration of mucous membrane; astrophy of the laryngeal muscles; either condition causing roaring or whistling. Thickening is best treated by iodide of potash internally; ulceration by applying a solution of silver nitrate with a sponge on a rod. For astrophy of the muscles nothing can be done.

Roaring is a wheezing, whistling, or hoarse sound made in the larynx in breathing, especially during excitement. It is usually due to paralysis or atrophy of the muscles of the left side of the larynx, this condition decreasing the calibre, the noise being made during inspiration. But any obstruction in the large air tubes may cause roaring, heard most commonly both during inspiration and expiration, such as fracture and depression of the nasal bones, polypi, osseous or other tumors, thickening of the mucous membrane, a false membrane, &c. The roarer often has a cough of a loud, hoarse, dry character, and is generally a grunter. An animal should always be subjected to severe exercise in examinations for soundness before an opinion is given.

TREATMENT.—If due to any removable cause, of course remove it; but if due to atrophy of the muscles (as is usually the case) not much can be done. In the early stages benefit may be derived from blistering or firing the throat, or giving chlorate of potash. Electricity has been found beneficial. The sounds may be modified by pressure in the shape of pads attached to the bridle so as to press on the false nostrils. Tracheotomy may be performed in extreme cases. It is sometimes performed in race horses.

Croup is a form of inflammation of the throat characterized by the formation of a false membrane of a greyish white color. It is generally seen in calves, lambs and foals, subjected to cold, damp, or high, exposed localities.

SYMPTOMS.—Sore throat, coming on suddenly with hard, croupy cough, and dry, wheezing breathing, worse at one time than another. The false membrane is discharged in shreds on the second or third day. Fever runs high, with quickened pulse.

TREATMENT.—If there is danger of suffocation perform tracheotomy. In milder cases steam the nostrils with hot water and a little carbolic acid. Apply a solution of nitrate of silver, $\frac{1}{2}$ dr. to 1 fluid oz. of water. Give nitrate of potash and soda hyposulphite in water. If there is much prostration give nitrous ether, give oil if indicated, and make comfortable.

Bronchitis, or inflammation of the air tubes leading to the air cells.

CAUSES.—The same as catarrh or laryngitis, or an extension of the inflammation in those diseases. It is often caused by worms in the tubes or by the introduction into them of smoke or other foreign bodies, or of medicine carelessly administered, when it is called mechanical bronchitis.

SYMPTOMS —At first there is a dryness, narrowing and rigidity, and subsequently moisture, dilatation and relaxation of the tubes. Owing to these changes, the vibrating sounds, caused by the passage of air through the inflamed tubes, undergo variations, which indicate pretty clearly the dry or moist condition of the parts. At first there is a hoarse, ringing, loud, dry cough, which becomes moist as the disease advances. The respirations are greatly accelerated and out of all proportion to the pulse, and of a short, quick character. The animal is dull, listless, hangs his head, and is generally thirsty, temperature increased, a ropy saliva fills the mouth, the mucous membranes are injected, the animal stands in a corner or moves aimlessly about. If in a box with the door open he stands with his head to the open air. Bowels costive, urine scanty. There is a loud noise over the wind pipe and behind the shoulder blade, which after three or four days becomes less harsh and blowing, but with a slight rattle from bursting bubbles, the cough becomes soft and rattling. The animal stands obstinately.

TREATMENT.—Attention to the surroundings and clothing, sloppy food, a dose of opium in the first stages if there is irritability. The inhalation of a little carbolized steam, give all the cold water he will take with nitrate of potash dissolved in it. In the second stages give ale or gruel if the administration does not cause coughing, give enemas and a little oil if constipated. Apply counter irritation, as mustard, to the trachea and breast. As soon as fever has subsided give tonics, as iron and gentian.

Congestion of the Lungs—Pulmonary Apoplexy—Consists of an engorgement of the functional vessels of the lungs, due to a weakened condition of the heart, from over exhaustion, especially when not in a fit condition, and is occasionally due to exposure to cold.

SYMPTOMS.—The animal stands with outstretched legs and seems to fight for breath, nostrils dilated, flanks heaving, trembling of the body, legs and ears cold, cold sweats bedew the body, mucous membranes injected, pulse small and indistinct and frequent. Hearts action tumultuous.

TREATMENT.—Place in a well ventilated box, allow plenty pure air, give stimulants, rub the body and limbs and apply bandages, clothe the body warmly but not too heavily, 4 or 5 quarts of blood may be drawn and a stimulant given to keep up the heart's action. Pneumonia may follow.

POST MORTEM APPEARANCES.—The lungs somewhat resemble the spleen, and when cut into present a deep, dark purple color, the vessels are filled with dark blood of a tarry nature. The lungs will generally float in water, thus differing from pneumonia. (Must not be taken for hypostatic congestion which may occur post mortem, or during the death struggle, and always appears in the most dependent parts of the lungs.)

Pneumonia or Inflammation of the Lungs differs from congestion, in which we have strangulation of the functional vessels, but in inflammation there is an effusion from the vessels and a general alteration of the lung tissue.

CAUSES are the same as the other acute diseases of the chest and as a consequence of congestion or of parasites, or other foreign bodies in the lungs.

SYMPTOMS.—It is generally ushered in by rigors, accelerated pulse 50 to 80, the temperature 103 to 104 or even higher, dry, deep cough, coldness of the extremities, the animal wanders about in a depressed manner, or stands in one position for hours, appetite almost lost, mucous membranes injected. For the first few days the respirations may not be more than 5 or 6 over normal and they may rise as

high as 30 or 40. If complicated with pleurisy there is more pain, but in pure pneumonia there is an absence of painful symptoms. The signs revealed by osculation are in the first stages small crepitations, indicating dryness of the lung tissue, secondly, absence of sound, indicating engorgement and consolidation, thirdly, the re-appearance of the crepitation now of a longer character, pointing out that the exudate is undergoing change and becoming absorbed, and he will generally stand with legs outstretched and nose protruded. During all the stages increased dullness is elicited by percussion. The inflammation is generally confined to one lung, and that the right, but is sometimes seen in both and is often fatal. After the first stage the cough becomes moist, and in the latter stages there is generally a foetid breath, indicating gangrene of the lung tissue.

TREATMENT.—Make comfortable. In the first stages, when the pulse is full and strong, bleed or give 10 drops of Fleming's tincture of aconite every 2 hours for 5 or 6 doses, or until the pulse is lowered. Allow cold water with nitrate of potash in it. Apply blankets wrung out of hot water to the chest, or apply a mustard plaster and wash off in 5 or 6 hours. When the pulse begins to get weak give stimulants as 5 or 6 oz. of whiskey 3 times daily. Give laxative, nutritive food. If constipation is threatened give injections per rectum. If he won't eat give milk and eggs, which he will generally drink, if not allowed water for a few hours. When convalescence begins and fever subsides give tonics, and be very careful of the animal, as a recurrence or relapse is easily caused. In this, as in all respiratory disease be very careful in giving purgatives, as they act very severely. When necessary to give a laxative, oil is preferable to aloes.

Pleurisy is partial or general inflammation of the pleura. It may be either double or single, generally single and confined to the right side. **CAUSES** are the same as other chest affections.

SYMPTOMS.—It is generally ushered in by a chill, shown by a staring coat coldness of the surface of the body and extremities, succeeded by signs of pain, often mistaken for colic, during which the horse paws and perhaps lies down and rolls, etc. He soon becomes stiff and sore and if made to move or rapped on the affected side, groans. The re-

spirations are rapid and incomplete, the ribs are fixed. He persists in standing. Respirations are mostly abdominal, a well marked line will be noticed from the false ribs to the anterior spine of the ileum. There is a short, dry, painful cough, pulse hard and quick. It is often associated with pleurodynia or inflammation of the intercostal muscles, when the animal moves in a very rigid manner, steps slowly and short, is greatly dejected, the back is arched, the skin shows tenderness on pressure. Hydrothorax or water in the chest is generally present, especially after the first stage, and it consists of a serum, which is the result of inflammation. Then the pulse becomes small, frequent and soft. There is absence of sound in the lower parts of the chest, or a sound like that of drops of water falling into a well. It is followed by an improvement of the pleuretic symptoms at first, but if this outpouring of serum continue the difficulty in breathing becomes much increased. Dropsical swellings sometimes appear along the abdomen and in the legs.

TREATMENT.—If there is much pain give opium in a pint of linseed oil. If pain continue the opium may be repeated, After pain ceases, if the pulse remains strong, give aconite. Fomentations to sides, succeeded by mustard or strong liniment, repeat the mustard if necessary, give potassium nitrate in water or potassium iodide in dr. doses. When the pulse becomes weak, give stimulants, give good food and attend to comfort. If much effusion takes place tap with trocar and cannula, and draw the fluid off, puncture in the 8th or 9th intercostal space at the anterior border of the rib. When convalescence commences give tonics and good food.

Strangles, or Distemper, is an eruptive fever peculiar to the horse. It occurs in a regular form called regular strangles, and in an irregular form called irregular strangles.

SYMPTOMS of 1st form : Unthriftiness, cough, fever, more or less inability to swallow, discharge from the nostrils, swelling between the jaws or of the throat, which is painful, becoming soft in the centre in a few days, and soon bursting. This form generally passes off in a week or ten days.

The irregular form may appear as a sequel to the former or may appear independently, there being the same systemic symptoms, but abscesses form in different parts of the lymphatic glands ; abscess after abscess may form in any part of

the body, the result varying according to the importance of the organ attacked, being frequently fatal. Is due to a poisonous matter in the system, which may be generated within or introduced from without. Most horses suffer from strangles at some age, generally before 4 years old. It is generally considered contagious.

TREATMENT.—Attend to comfort, give soft nutritious food, steam the nostrils, poultice the throat, and apply ammoniacal liniment. Give hyposulphite of soda 1 to 3 dr. doses 3 times daily, if the appetite is gone give milk and eggs, open the abscesses and treat after opening as an ordinary wound, by keeping clean and injecting white, or carbolic lotion. If necessary perform tracheotomy. Follow up with tonics and good food.

Purpura Hæmorrhagica is an eruptive non-contagious fever, usually occurring as a sequel to some other disease; generally following some debilitating disease of the respiratory organs.

SYMPTOMS.—An animal that is supposed to have about recovered from some respiratory disease is noticed to be stiff and sore, with swelling of the limbs, which generally extends rapidly. The swellings are peculiar, always ending abruptly as though a cord had been tied around the limb. There is often a swelling of the face and nostrils, small purple spots appear on the schniderian membrane, and in the mouth and tongue, and in white legged horses they can also be noticed on the limbs. After a day or two there is an escape of a purple fluid from these spots. The animal stands in one position for days, the bowels are constipated and the urine scanty and high colored; appetite gone, the mucous membranes all of a purple color. The swellings increase, as also does the discharge, until the animal becomes a most disgusting sight; breathing is difficult according to the amount of the swellings, and he dies of suffocation or exhaustion.

TREATMENT.—Give 2 oz. turpentine and 10 oz. of oil once a day; give about $\frac{1}{2}$ oz. chlorate of potash 3 times daily, bathe the nostrils and legs with cold water. Attend to comfort; give good food and tonics.

Grub in the Head in Sheep.—A disease of sheep frequently met with, and commonly called grub in the head, is caused in the following manner: During hot weather (fly time) the common bot fly of the sheep (*Cæstrus ovis*) deposits

its eggs in the nostrils of the sheep. The young larvæ make their way to the sinuses of the head and lodge there for development. During the coming months the larvæ develop into grubs, and by the warm weather of the following spring are ready to vacate their habitation. Having escaped to the ground they burrow in the earth until they become flies and are ready to attack the sheep as did their progenitors the preceding summer. During the development of the larvæ in sinuses of the head, and especially during the latter stages, they often cause the sheep great distress, manifested by sneezing and coughing, shaking of the head, a discharge of mucous from the nostrils which causes snuffling. The affected animals often isolate themselves from the rest of the flock, the appetite is much impaired, and general emaciation is soon apparent. Unless relief be attained, either by the spontaneous escape of the grub, or otherwise, it will cause the animal's death.

TREATMENT.—Fumigating with burning sulphur will often give relief. This is done by placing the sheep in a close room and burning sulphur until the room becomes filled with its fumes, the animal inhaling the fumes destroys the grubs and they escape through the nostrils. Another, and probably, a better, mode of treatment is to make a mixture of one part oil turpentine and four parts sweet milk, agitate until the turpentine is thoroughly mixed with the milk, then take an ounce syringe, to the point of which is attached a rubber tube about two inches long, fill the syringe with the mixture, have an assistant hold the sheep on her rump with the nose elevated, insert the tube into the nostril and empty the syringe quickly. Let the head down immediately after the injection, and after the animal ceases coughing inject the other nostril.

Wool Balls in the Stomach of Lambs. A great many lambs (especially early ones), die suddenly every year and the owner is often at a loss to find out the cause. A post mortem will often reveal a ball of wool in the fourth stomach, which stops up the pylorus and causes death, often very suddenly; in other cases, when the ball is moveable, the animal is noticed to not be thriving for a greater or less time before death. The trouble caused by the ewes not giving a sufficient quantity of milk to satisfy the hunger of

her lamb or lambs, and the little fellows will get nibbling and sucking the mother's wool, a few fibres of which is taken into the stomach at a time, they generally reach the fourth stomach and remain there, where they gradually accumulate and form a ball until it gains sufficient size to stop up the pylorus and cause death.

TREATMENT is of no avail when once the wool gains the stomach. Preventive treatment consists in seeing that the lambs obtain sufficient nourishment. If the ewe has not sufficient milk they must be fed cow's milk, and as soon as they will eat, they should get roots, finely pulped.

Tuberculosis, Pining or Consumption, consists in the presence of minute tumors or tubercles in different parts of the body, having especial preference for the respiratory organs and glands; it is infectious. It is seldom seen in horses, cattle are the most prone, then pigs and sheep.

CAUSES.—It is due to the presence of minute animal organism called the bacillus of tubercle, and is produced in any way that these gain access to the system, either by contagion or infection.

SYMPTOMS.—The symptoms of tuberculosis are very insidious, the disease, in many cases, existing in an animal without any symptoms being shown which would lead to the belief that the animal is affected. As almost any organ is liable to be affected, the symptoms will depend upon the organ or organs attacked, and also upon the extent of the disease in that organ or organs, no visible symptoms being present until the disease has reached a sufficient stage of development to interfere with the functions of the organ. In some cases a number of organs are involved, thus complicating the symptoms. In some cases, as stated, no symptoms are noticed, while in others there is unthriftiness, dry staring coat, capricious appetite, irregular digestion, occasional tympanitis, diarrhoea and constipation, followed by emaciation. The temperature of a tubercular animal is generally higher than normal, but this is not always the case. When the lungs are involved there is usually a cough of a dry, short hacking nature, and if the disease be very extensive there will be more or less difficult breathing. The pulmonary symptoms will, of course, depend upon the extent of

their derangement. If the digestive organs be attacked there will be digestive derangement as soon as the disease is sufficiently advanced to interfere with their functions. An animal may be affected for a long time without showing any positive symptoms. Sometimes the muscles are the seat of the disease. Then it is called muscular tuberculosis.

TREATMENT is useless. Isolate all suspected animals, and as soon as positive symptoms appear slaughter them and burn the carcasses; or use Prof. Koch's tuberculin as a diagnostic medium. The test is made as follows: Take the animal's temperature; it is good practice to take the temperature occasionally for a few days before testing, of course keeping a record of the date and hour at which it is taken. Take the temperature immediately before commencing the test. Sterilize the hypodermic syringe and needle, and the point of injection (I usually select the loose skin just behind the scapula) with a five per cent. solution of creolin or other good disinfectant, then inject hypodermically from 50 to 70 drops (according to the size of the animal) for a young animal use less, of a ten per cent. solution of tuberculin in a one per cent. solution of carbolic acid. The animal's temperature then should be taken every three hours for the space of 24 hours. If in the meantime the temperature should rise two degrees or more above the starting point it indicates that the animal is diseased; if there should be only a slight degree of increase of temperature, less than two degrees, the indications are that the animal is free from the disease. I have found the test very correct. The increase in temperature is called "the reaction."

Post Mortem Appearances.—The tubercles may be found in any organ, and vary in size from a millet seed to that of a bean, but they often congregate together and form very large masses. In the first stages they are hard and greyish in color, but afterwards soften in the centre, becoming yellow, soft and cheesy in character. Masses of them degenerate in this way, showing large masses of creamy matter. In some cases the tubercles are very small and hard to find, "although the reaction may have been well shown during the test," and as any organ, even the brain or spinal cord, is liable to be the seat, a very careful post mortem is necessary in order to discover the disease.

